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Consumers' Research

BULLETIN

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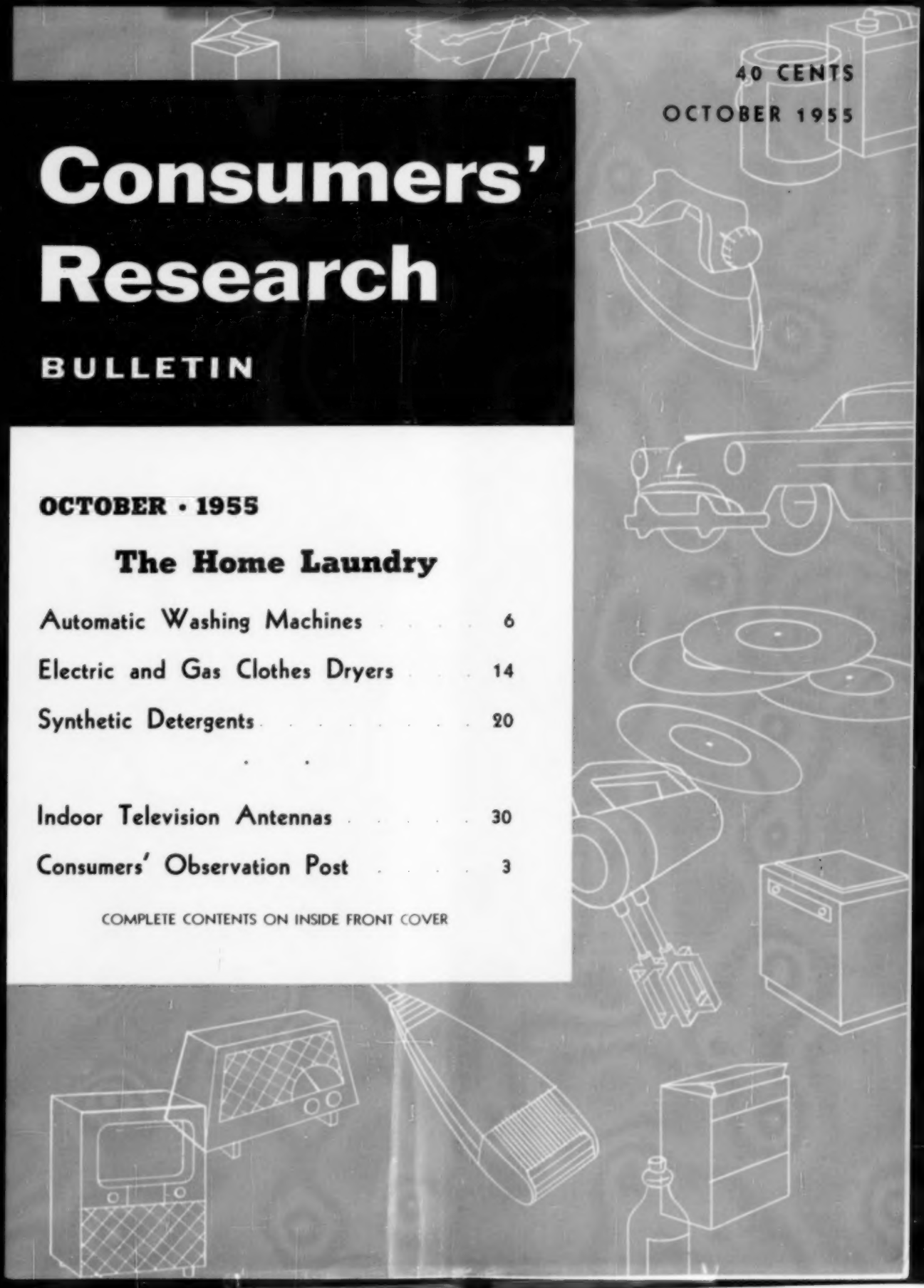

Consumers' Research Bulletin

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Consumers' Research functions to provide unbiased information on goods bought by ultimate consumers. For their benefit (not for business or industry) and solely with the funds they provide, CR carries on tests and research on a wide variety of goods, materials, and appliances, and publishes the findings in CR BULLETIN. Consumers' Research is a non-profit institution, and is organized and operates as a scientific, technical, and educational organization.

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OFF THE EDITOR'S CHEST

IS INSTALLMENT BUYING, or buying on time, helpful or harmful, a blessing or a curse, from the consumer's point of view? Economists, business advisers, politicians, and financial journalists are beginning to express concern that current prosperity is too largely derived from on-the-cuff transactions. Many families are mortgaged to the hilt. One business letter pointed out that with down-payments close to the non-existent level and installments stretched out over the expected life of the article, many people were in effect "renting" rather than buying their cars and appliances.

One financial newspaper recently presented an itemized account of the plans of a young workman and his wife and family. With a take-home pay of about $80 a week, the family was committed to installments on a home, furniture, and a number of appliances, as well as insurance. When the total weekly payments get down to about $40 a week, the family is planning to buy on time a 1955 car in the $2400 price bracket, although the lady of the household would prefer a pink *Lincoln* and has considered taking a job in order to help pay for the higher-priced car.

The present attitude of consumers is a far cry from the thrifty "don't spend it until you have it" concept. Trips abroad and other vacation excursions are being sold on the installment basis, a payment down and the rest when you get back, but, as one observer noted, nothing is quite so frustrating as paying off the balance on a holiday you've already had. There is more to be said, perhaps, for buying over a two-year period long-lived appliances such as washing machines and refrigerators, that may be expected to give 6 to 10 years of service, particularly when such purchases enable the family to live more comfortably and perhaps more economically.

It is often possible for those who know how to do a little arithmetic to figure out whether it is

(*Continued on page 32*)

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It will be advantageous if you will, whenever possible, send prompt notice of change of address at least 5 weeks before it is to take effect, accompanying your notice with statement of your old address with name in full. At least a month's notice must be given in any case. ¶This rule, however, regarding long advance notice does not apply to military personnel. *CR will, of course, gladly change addresses for men and women in the services as often as required by changes in station and other circumstances.*

Symbols used to indicate sources of data and bases of ratings: **AA**—regarded as worthy of highest recommendation; **A**—recommended on basis of quality; **B**—intermediate with respect to quality; **C**—not recommended on basis of quality; cr—information from Consumers' Research's own tests or investigations; **1,2,3**—relative prices, **1** being low, 3 high. Note that price and quality are completely differentiated in CR's listings; **a quality judgment is independent of price;** 54.55—year in which test was made or information obtained or organized by the staff of Consumers' Research.

The Consumers' Observation Post

INSTRUCTION BOOKS that provide directions in fine type are a headache to read. Labels covered with printing and lots of information under various subheadings may require a magnifying glass--if there is one around the house--to figure out how to apply a product such as paint, and other supplies for the home workman, according to a complaint in the do-it-yourself section of a New York paper. Other objectionable practices include praise for the product mingled with directions for use, use of colored backgrounds that make the printing difficult to read, and flimsy paper for instruction sheets that disintegrate before their time of service is ended.

* * *

BACKYARD PICNICS AND BARBECUES hit a new high in popularity this past season. The sales of outdoor cooking equipment are expected to be double those of last year, according to one informed source. Hot dogs, hamburger, and their accompanying rolls and buns are all in increasing demand. One company reported the sales of twice as many hamburger rolls in June of this year as in 1953. Packers and butchers have been pleased to discover that thick cuts of meat suitable for broiling were as much in demand during the summer as they customarily are in the winter months. One happy development for the housewife is that men seem to take to outdoor cooking with great enthusiasm - never mind how black the cooking utensils get!

* * *

THOSE WHITE-SIDEWALL TIRES are so fashionable that people with perfectly good all-black tires are tempted to have them converted. Some repair shops are reported to be offering to apply a preparation that will do the trick. Better not, warns the Better Business Bureau of Santa Barbara, for at least one manufacturer has advised dealers that the application of white sidewalls to black tires voids the tire manufacturer's guarantee.

* * *

THE OVERFAT PORK produced in this country has been a subject of much complaint by consumers, over a period of many years. According to Fortune magazine, pork products have recently been losing out to poultry and other meats because consumers prefer lean meat and don't want lard. The dissatisfaction has now been translated into practical advice to the farmer, and the emphasis by agricultural experts is being put on breeding and feeding of hogs for lean meat content. No doubt it will take time for the new methods to achieve results, for the type of bacon currently available is still on the lard side.

* * *

FOR SKIN DISINFECTION, 2% tincture of iodine U.S.P. for a period of two to five minutes or more is held to be the most effective. That is the opinion of one consultant, in the Journal of the American Medical Association, who pointed out that it will destroy a larger percentage of the normal bacterial flora on the skin than either tincture of Merthiolate or tincture of Zephiran. He considered the action of hexachlorophene relatively slow.

* * *

ASPIRIN may cause dyspepsia if taken too frequently over a long period of time. It may also cause gastric hemorrhage if taken on an empty stomach. Two British physicians writing in the British Medical Journal recently reported a number of cases which had come to their attention indicating the harmful effects of aspirin on the stomach, particularly in peptic ulcer patients. Aspirin should also be kept out of the reach of children for it is very frequently involved in the poisoning of youngsters who eat it, especially in the form that has a flavored coating.

COMBINATION STORM WINDOWS are expected to be increasingly popular this year. The forthcoming sales campaign is scheduled to stress the fact that storm windows have an all-year function, particularly in homes with air conditioning units, not only for keeping heat in during the cold months, but keeping it out in hot weather.

* * *

"MAKING INVENTIONS PAY" is the title of a book that is of considerable interest to all students of consumption and marketing. The author, Joseph C. Keeley, takes issue with the suggestion of Ralph Waldo Emerson that the world will beat a path to the door of the man who invents a better mouse-trap. Mr. Keeley points out that Emerson was a poor adviser, for he never made a dime out of an invention, and the more successful ones today are living proof that the merchandising or marketing of an invention often costs as much as the development itself. The selling effort needed may far exceed the amount of creative work that went into the product in the first place. The book presents a number of case histories of inventions that are now household words such as Coca-Cola, Schick Shaver, Segal Lock, Bayer Aspirin, Scotch Tape, the Argus camera, and the Bendix Economat washing machine, with a brief description of their marketing problems and techniques. "Making Inventions Pay" is published by Whittlesey House, 330 West 42 St., New York 18, at $4.

* * *

FABRICS THAT CANNOT BE satisfactorily cleaned continue to appear on the market. One satin fabric that is currently causing trouble, according to a report by the National Institute of Drycleaning, is made of white acetate yarns and a colored rayon yarn. Since it is heavily sized with a water-soluble sizing, perspiration under the arms and at the waistline may cause rings which, if they are quite noticeable, cannot be removed in dry cleaning.

* * *

FROZEN FOOD PLANS are making a comeback in certain western states, although just a short time ago there were more repossessed freezers, according to Electrical Merchandising, for sale in certain cities of the Far West than the combined stock of new freezers held by dealers and distributors. The current food plans are more conservative and cautious in their advertising claims, for obvious reasons. It is difficult, if not impossible, to back up the claims that a large frozen food order will enable the purchaser to save enough money to pay for the freezer, in view of the wide availability of frozen foods at low prices offered as loss leaders by supermarkets in the Far West, and the declining prices for beef and pork.

* * *

AIR CONDITIONING is being advertised as a beauty aid by one manufacturer. In fact, it is advocated as the newest wrinkle remover in the beauty field. The press release supporting the advertisement suggests that when high humidity keeps perspiration from evaporating, the pores and glands become clogged; then skin ailments develop, perhaps even rough, red rash, that might lead to permanently injured skin. The abracadabra for magical effects that used to be claimed for certain cosmetics made according to a formula found in a trunk in an old castle in central Europe apparently has its appeal for ad-men in other fields.

* * *

THE SUPER MARKET provides a wide variety of products conveniently and attractively displayed, but after a busy shopper has filled up her cart she has to wait too long to have it checked out. One grocery trade journal reports that the average customer spends almost as much time standing in line to be checked out as in shopping. She averages 27 minutes in shopping and 22 minutes standing in line during the busy period Thursday, Friday, and Saturday. One solution suggested is to buy when there are fewer people shopping, but many undoubtedly find that selection in stores is better and variety greater the last three days of the week.

(The continuation of this section is on page 33)

So You're Going to Buy an Automatic Washer

IF you're going to buy an automatic washer and dryer, you will have found that this pair of appliances will cost about $500. If that amount fits your budget, you're ready to go down to the appliance store and have them delivered.

But wait a minute, that $500 pays only for the washer and dryer delivered, uncrated, and set in place. It does not include the cost of installing the necessary plumbing, wiring, etc. If you already have the proper electrical service (and gas pipe connections for a gas dryer), plumbing connections, and means for venting at the place you intend to put the washer and dryer, you will not be forced to make additional outlays of cash. But if you don't, better sit down and do a little estimating.

The washer will require a drain, a hot-water and a cold-water connection, and an electrical outlet on a branch circuit good for 15 amperes (or preferably 20 amperes), all within about 5 feet of the position in which the appliance will be installed. A gas dryer will require an electrical outlet, a gas line and shut-off cock, and facilities for venting the hot, moist, lint-carrying air outside of the house. An electric dryer will require its own branch circuit and electrical outlet, and either a means for venting or a cold-water connection and drain, according to the type of dryer you decide on. All this can add quite a bit to the original cost of the washer plus dryer.

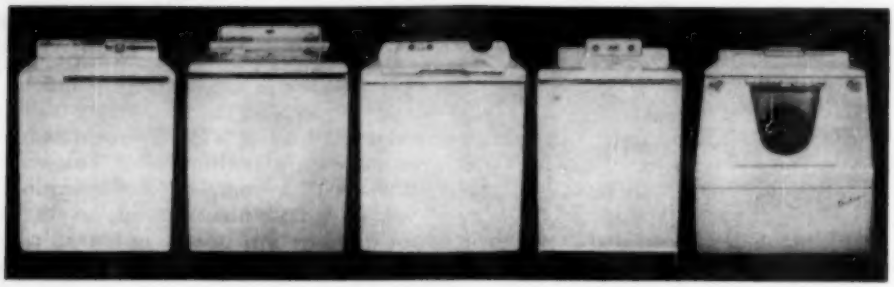
Providing just the hot- and cold-water supply and drain can easily account for an extra $75. (If the runs are short, you may get a bill for as little as $25.) If your washer drains into a septic tank, you may have to increase the soil absorption area as much as 50 percent to take care of the increased amount of water if the absorption system is close to being fully loaded. A 115-volt electrical circuit and outlet will cost $5 to $15 on the average. If you already have 230-volt service in your home, a branch line for a dryer may cost $25-$30. If you don't have 230-volt service, or your present system cannot carry the extra load of a dryer, you'd better get an estimate on a rewiring job. This may run to $200-$300 for complete modernization to provide for today's numerous appliances, which call for wire of adequate size in branch circuits and proper grounding circuits, with suitable heavy-duty outlets in some cases.

Venting a dryer is fairly inexpensive for most installations. Usually the required material will cost $8-$15, and if the flue can be run through a near-by cellar window, the installation can be made in an hour.

Suppose you rent your home and you cannot make permanent installation of the various facilities required. You can get certain automatic and semiautomatic washers mounted on casters, with a connector for the faucets on a kitchen sink. You wheel the washer to the sink, connect the water hoses, hang the drain hose from the washer in the sink, plug in the power cord, and wash. When the wash is done, you disconnect the machine and roll it out of the way.

Most 230-volt electric dryers operate on 115 volts with very simple changes in the wiring. When the appliance is wired for 115 volts, you can plug it into an ordinary wall outlet (1650 watts) *if* that circuit is not supplying any other appliance with power. It will take two or three times as long to dry the clothes on 115 volts as on 230 volts, but the lower voltage does give one a means of avoiding the expense of a 230-volt (3-wire) installation. Of course, you should have a vent, too, but when the dryer operates on 115 volts, delivery of the hot, moist air to the room is spread out over a greater period of time; this makes the moisture somewhat easier to deal with than with the 230-volt setup. Sometimes an open window or two, with an electric fan circulating the air, will be adequate to get rid of most of the moisture and heat from the dryer. There are flexible vent tubes available which can be used on some dryers. These can be extended through an open or partly opened window if the dryer is close to one.

Automatic Washing Machines



THE automatic washing machine has been responsible for a major change in the home laundry process in the past 10 years. Its popularity, evidenced by the fact that there are now about 10 million in use, has been responsible for changes in other laundry equipment, in washing compounds, choice of textiles, and in washing methods and habits.

The acceptance of the automatic washer was followed by the development of practical automatic clothes dryers. New synthetic detergents, new water softeners, new bleaches, and even new models of water heaters have been produced to keep up with the modernization of the home laundry paced by automatic washers. Now even the fabrics are being changed, because the housewife demands that she shall be able to wash and dry nearly all kinds of clothing in her new appliances. The heaviest burdens of "washday" have been eliminated in many homes because the washing and drying can be done mechanically while the housewife attends to other chores, or perhaps keeps track of a TV program.

The automatic washer is more expensive than its predecessors. It must be expected to have a shorter life than the non-automatic machine, but offsetting this is the fact that the automatic washer is very much more convenient *and is far safer to operate*. (CR has in file numerous reports of serious injuries and many deaths caused by hair, hands, or clothing caught in power wringers.) The non-automatic washer often lasted 20 years. The useful life of an automatic washer is considered to be about six to seven years of normal use (counting say five loads of wash per week). During its life the automatic machine can be expected to need some servicing, perhaps as often as once, twice, or three times in a single year, and this is likely to be fairly expensive. No one should buy an automatic washer with the expectation that the first cost will be the last outlay for several years.

The amount of hot water used by an automatic washer may run from 10 to 30 gallons per load of clothes, depending upon the make and type of machine. Quite often the hot-water tank or heater which was adequate for a non-automatic washer (because the wash water was used for more than one load) cannot supply enough hot water to do the whole family wash with an automatic machine.

Many women (and some husbands, too) do not understand the operation of an automatic washer. Briefly, here is what it does. The user places the clothes in the tub, adds the correct amount of detergent, sets the controls, and starts the machine. The tub fills up with water and then the washing action starts. At the end of the washing period, the spinning action extracts most of the wash water from the clothes. The tub again fills with water and the clothes are rinsed for a few minutes, the water is again extracted from the clothes until they are "damp-dry," and the machine shuts off. The details may vary (there may be a soak period, or two rinses), but all automatic washers have similar sequences of operation.

The controls may look needlessly complicated on some machines, but whatever the arrangement, they accomplish similar results. All auto-

matic washers have a main control, usually a dial showing "Fill," "Wash," "Rinse," "Spin," "Off," or equivalent wording. This dial is turned to "Fill" or possibly to "Wash" to start the machine, and it indicates exactly what the machine is doing as it goes through its operations.

A second control is the wash water temperature selector. This may be part of the main control, but usually is a separate dial or switch marked "Hot," "Medium," and "Warm," or maybe just "Hot" and "Warm." If this control is set at "Hot" the machine will open a valve in its hot-water line and fill the tub with hot water at whatever temperature the water heater supplies. If the control is set at "Warm" the machine will open both the hot- and cold-water valves and fill the tub with water mixed to give about 100°F. The "Medium" setting will result in a wash water temperature about half way between 100° and the temperature of the hot-water supply. Most automatic washers do not provide a choice of temperature for the rinse water. This is normally a mixture of hot and cold water, automatically regulated to about 100°.

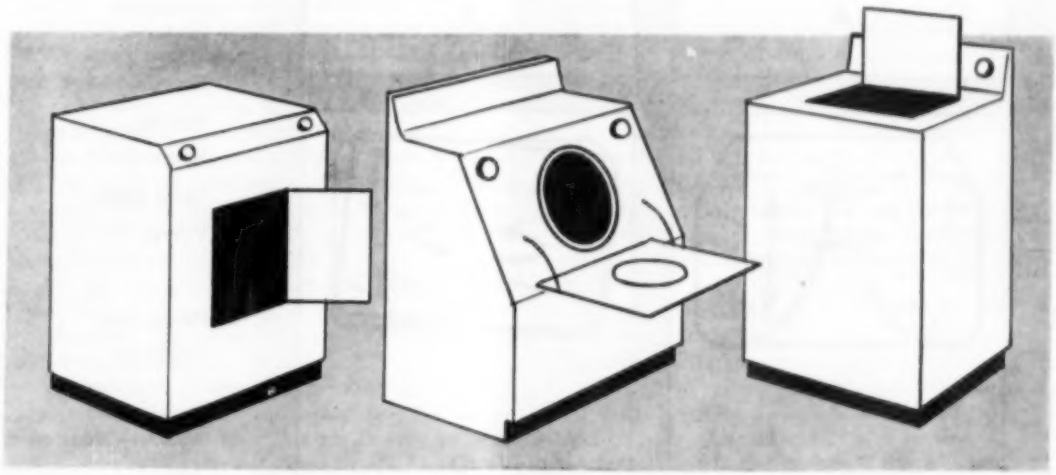
Some machines have an adjustable water level control, marked for regular, medium, or small loads. This control, when set for a regular or full load, will allow the tub to fill to its full capacity. When the control is set for medium or small loads, the tub will fill to about ¾ or ½ the full capacity.

Choosing an automatic washer

A number of factors must be considered when choosing an automatic washer. It is not possible for CR to pick out a particular machine and say "this is the best." Such characteristics as clothes capacity, water consumption, cabinet size, type of water level control, vibration, noise, and washing ability must be taken into account, in the light of each consumer's own problems and needs. In homes which have a good supply of hot water, normal water pressure (about 40 to 60 pounds per square inch), no space restrictions, a reasonably rigid floor, and average-size loads of wash, any machine in the *A-Recommended* group will likely prove satisfactory. Dryers are available which match the washers tested.

Since even the best of the automatic washers cannot be counted on to run for years with no need for occasional servicing or replacement of parts, no consumer should buy a machine of any make without first taking steps to assure herself by inquiries of neighbors and friends that prompt and efficient dealer service will be available whenever needed. Assured availability of repair service and promptness in supplying it is fully as important as any other factor in the choice of an automatic washing machine.

If hot water is scarce or expensive, a machine with means for re-using the wash water is desirable (for example, the "*Suds-Saver*" on some models of the *Kenmore*). The wash water must



The cabinets of washers and dryers come in three general styles.

Dryer or tumbler-type washer, also combination washer-dryer.

Westinghouse version of dryer or tumbler-type washer, also combination washer-dryer.

Agitator, pulsator, and wobbling-basket-type washer.

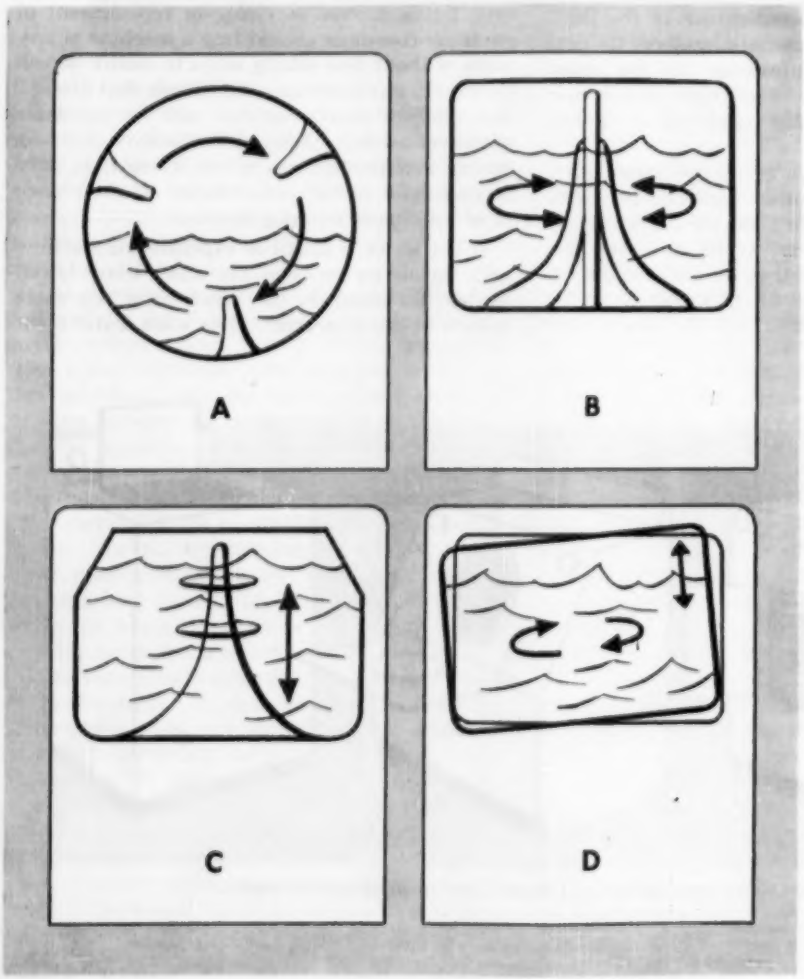
be stored in a sink or tub until the second load is washed. If the machine is installed in the kitchen, there may be no convenient place to store the water. An alternative is to choose a machine that uses a relatively small amount of water (10 to 15 gallons), e.g., some rotating-drum or wobbling-basket types. See table, page 13. It should be noted, however, that in Consumers' Research's tests these machines (except for the *Bendix Duomatic*) had only fair washing ability compared with those using the agitator washing principle. See illustration below of different types of machines.

For apartments, the size of the cabinet is sometimes important. A few machines (for example, *Whirlpool*, *Bendix*, and *Kenmore*) can be had in cabinets as narrow as 24 inches (the usual width is 27 to 30 inches). Some machines are available with casters and special connections for sink faucets for the house or apartment where permanent water pipe connections are not allowed. These models should be properly grounded electrically when used.

In homes where water pressure is low, or may at times drop below 20 pounds per square inch, a machine with time-controlled water level is not desirable, as this system is not as certain to fill the machine properly as the pressure-, weight-, or float-operated control. (The time control may start the agitation before the tub has enough water in it to wash properly. In extreme cases the clothes might be damaged.)

Vibration during normal operation was not so great as to be objectionable in the machines

Types of washing action in automatic washers



A. Tumbler or drum type

Bendix

Westinghouse

B. Agitator type

ABC

Bendix

Blackstone

Easy

General Electric

Hamilton

Hotpoint

Kenmore

Maytag

Norge

Speed Queen

Whirlpool

C. Pulsator type

Frigidaire

D. Wobbling-basket type

Apex

Universal

tested, when they were installed on a good floor. However, all machines using a spin to extract water can develop possibly disturbing vibration with unbalanced loads. If minimum vibration is important (as on a weak upper floor) a *Bendix Economat* provides a practical solution, at the expense of poorer water extraction at the end of the cycle.

Operating an automatic washer

The automatic washer must be properly installed and adjusted to insure satisfactory operation. The machine must be level and have a solid footing. The water connections must be tight to prevent leaks. The water system should be able to supply hot water at 140° to 160°. The water pressure should be above 20 pounds per square inch. The electric supply cord should be plugged into a wall outlet which is on a separate circuit, or a circuit that is otherwise lightly loaded. The cord should not be plugged into a lighting fixture or connected with an ordinary extension cord.

The owner of a new automatic washer should read the whole of the instruction book before attempting to operate the machine. If at all possible, she should have a home demonstration. She is not ready to begin washing until she has become familiar with all the controls and understands the washing procedure.

A few general rules for operating an automatic washer are:

Do not overload the machine. A full load is normally the amount of dry clothes that will fill the tub loosely. Do not "pack" the clothes in the tub, or washing action will be restricted.

Set the controls before starting the machine. With some machines, the washing time may be set before starting, with others the time must be reset after washing starts, if a shorter-than-normal washing time is desired.

Do not turn the main control from one part of the cycle to another while the machine is running, unless the instructions clearly state that this can be done. Turn the control only in the direction stated in the instructions.

Do not reach into the machine while it is in operation.

Measure—don't guess—the amount of soap or synthetic detergent.

When washing very heavily soiled clothes, set the controls for a full load, use enough soap or detergent for a full load, but put in only ½ or ⅔ the normal amount of clothes.

When the day's washing is done, turn off the switch, pull out the plug, and close the valves in the water supply lines. Leave the lid open for a few hours to allow the tub to air out.

The Westinghouse had a unique and convenient feature: a built-in "scale" to indicate the weight of the load placed on the open door. This weight-estimator tells the user the water level setting she should use for that load.

CR's tests

The washing machines in the following list were subjected to a detailed series of tests in CR's laboratories. An examination was made of design and construction. The machines were checked for electrical safety (shock hazard), which is most important for equipment used near plumbing pipes or in a damp basement; radio interference was also checked. Next the performance tests were carried out. Each machine was loaded to its full rated capacity and its washing ability determined. In the tests, a record was maintained of hot- and cold-water consumption, electricity used, maximum current drawn by the motor, noise, vibration, time required for a complete cycle, and the amount of water remaining in the clothes at the end of the cycle.

In the electrical tests, the *Westinghouse* and *Kenmore* exhibited a slight shock hazard. (Normally, slight leakage should imply no particular hazard *if the equipment is securely and permanently grounded*, as all laundry equipment should be when installed, to minimize risk of shock to the user.)

Radio interference was negligible for all machines except the *Kenmore*, in which a so-called "germicidal" lamp caused the interference.

Of the five washers in this test, the *Hotpoint* did the best job of washing with a rated-capacity load (8 lb.). The *GE* and the *Kenmore* washed the largest loads (10 lb. and 9 lb., respectively) and did a good job of it, but they also used the largest amount of hot water. (The washers that do the best washing job usually consume relatively large amounts of hot water.) The *Maytag*

washed well with a smaller load (7 lb.) and, along with the *Hotpoint*, used slightly less hot water per pound of clothes than the *GE* or *Kenmore*. The *Westinghouse* used the smallest amount of hot water, but ranked lowest in washing ability.

The five machines were fairly close together in the amount of water left in the clothes, to be handled by the dryer.

The cost for electricity used to wash a full load of clothes was highest for the *Hotpoint*, and twice as much as for the *Maytag*, which used the least. Even so, at average rates for electricity the *Hotpoint* would use less than one cent's worth of electricity per load.

The *GE* was somewhat noisier than the other machines when running normally, but could handle an unbalanced load satisfactorily in the spin period. The *Maytag* and *Westinghouse* occasionally got off balance and shut off during the tests. These two machines had devices to stop them if an off-balance load caused excessive vibration to develop during the spin period.

With low water pressure, the *Kenmore*, *Maytag*, and *Westinghouse* filled to the normal water level automatically. The *GE* filled to the correct water level except when the pressure dropped below 20 pounds. At this low pressure it did not fill with enough water for proper operation of the filter system, although there was enough water for effective washing. (A serviceman can adjust this machine to work correctly on very low water pressure.)

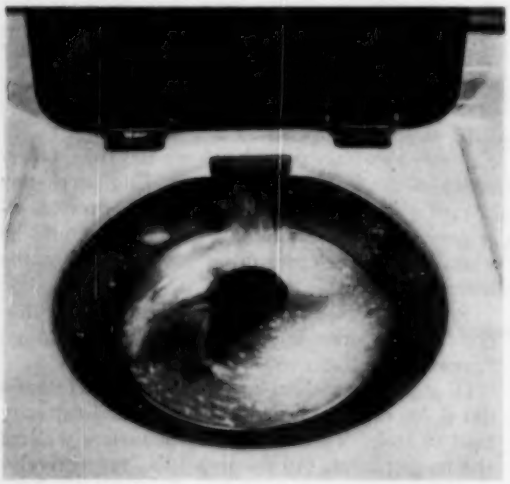
The *Hotpoint* had a time-controlled fill. In order to get enough water in the tub at low water pressure, the main control dial had to be set at a point ahead of the normal starting position to allow more time for filling of the tub. This system is not as desirable as the pressure-controlled fill used on the other four machines, if the home is one where water pressure is low or variable.

All the machines had provisions for reducing the amount of water used for small loads. With the *GE*, the operator had to wait until the desired water level was reached and then push a button. The *GE's* filter did not work with small loads. The *Maytag*, *Kenmore*, and *Westinghouse* could be preset to reduce the amount of wash and rinse water used for small loads. The *Hotpoint*, when preset, reduced only the amount of wash water used.

The *GE* and *Hotpoint* had brief operating instructions on the underside of the lid. The *Westinghouse* had a pocket in the control panel to hold the instruction book.

The *Maytag*, *Westinghouse*, and *Kenmore* had safety switches operated by the lid, and quickly brought the spinning tub to a stop when the lid was opened and at the end of the cycle. (Several women have been injured when they reached into the tub of an automatic washer while it was still spinning.) The filter of the *GE*, which fits on the top of the agitator, serves more or less to prevent the homemaker or a child from reaching into the tub during operation of the washer. Of course, it must be put in place at the beginning of the cycle if it is to serve as a safeguard, as intended (see illustration).

None of the machines listed required bolting down.



The GE Filter-Flo recirculates the wash and rinse water through an aluminum strainer with fine holes, which removes most of the large particles of lint. This strainer also serves as a safety device, to discourage anyone from reaching into the tub when the machine is running.

A. Recommended

General Electric Filter-Flo, Model WA-750M (General Electric Co., Louisville 1, Ky.) $350.

Dimensions and description: Agitator type, top opening. 40 in. high, 27 in. wide, 28 in. deep. Porcelain-enameled lid, top, and tub. Paint-enameled cabinet. Maker's capacity rating, 10 to 12 lb. Temperature of wash water adjustable by pushing "Hot" or "Warm" button. Rinse water was "Warm," a mixture of about ½ hot and ½ cold water. The water level was regulated by a pressure switch, but at very low water pressure (under 20 lb. per sq. in.) it did not allow enough water to enter the machine for proper operation of the filter system. The drain pump was used during the wash and rinse periods to recirculate the wash water through a removable filter screen on top of the agitator. (See illustration on this page.) The amount of water used could be reduced for small loads by pushing the "Water Saver" button to cut off the water when the desired level was reached. The washer could be stopped or

started at any part of the cycle. The cycle required 48 min. when the maximum washing time of 14 min. was used.

Performance in test: Effectiveness in washing a 10-lb. load, good. A 12-lb. load could be washed, but with this load the effectiveness of the washing action was reduced. The filter screen removed most of the particles of lint from the wash and rinse water. Effectiveness in extracting water from the clothes was good (water left in the clothes was about 65% of the dry weight of the clothes). Water consumption for a full load: 28½ gal. hot and 14½ gal. cold water. Current drawn at start of spin, 8 amperes (desirably low). Tub coasting time at end of cycle, about 1½ min. (undesirably long). Machine was noisier than other machines tested, and vibrated slightly during normal operation, but it did not get off balance easily during the spin.

¶One-year warranty, plus additional 4-yr. warranty on transmission.

Hotpoint, Model 10LK2 (Hotpoint Co., Chicago 44) $330.

Dimensions and description: Agitator type, top opening. 42 in. high, 26 in. wide, 29 in. deep. Porcelain-enameled cabinet, top, lid, and tub. Maker's capacity rating, 8 lb. Brief operating instructions on underside of lid, a desirable feature. Temperature of wash water adjustable by pushing button for "Hot" or "Warm." Temperature of rinse water adjustable by pushing button for "Warm" or "Cold." The water level was time controlled and was not considered as desirable as the positive-fill types of controls, especially where water pressure is low or variable. The amount of water used could be reduced for small loads by proper setting of the control dial, or by advancing the dial manually when the desired water level was reached. The washer could be stopped or started at any part of the cycle and had two separate cycles, a "Normal Fabrics" cycle and a shorter "Delicate Fabrics" cycle. The "Normal Fabrics" cycle required 33 min. when the maximum washing time of 11 min. was used. The "Delicate Fabrics" cycle required 20 min. when the maximum washing time of 3 min. was used.

Performance in test: Effectiveness in washing an 8-lb. load, good. Effectiveness in extracting water from the clothes, good (water left in the clothes at the end of the cycle was about 72% of the dry weight of the clothes). Water consumption for a full load for each cycle: 21 gal. hot and 20½ gal. cold water for "Normal Fabrics" cycle; 18½ gal. hot and 16 gal. cold water for "Delicate Fabrics" cycle. Current drawn at start of spin, 9 amperes (desirably low). Tub coasting time at end of cycle, 50 sec. (undesirably long).

¶One-year guarantee.

Maytag, Model 101P (The Maytag Co., Newton, Iowa) $320.

Dimensions and description: Agitator type, top opening. 41½ in. high, 25½ in. wide, 27½ in. deep. Porcelain-enameled top, underside of lid, and tub. Paint-enameled cabinet and top of lid. Maker's capacity rating not stated, but capacity was about 7 lb. Machine would not operate with lid open, a very good safety feature. Temperature of wash water adjustable by setting control to "Hot" or "Warm." Rinse water automatically regulated to about 100° (warm). The water level was regulated by a pressure switch and was not affected by low water pressure (desirable). The amount of water used could be reduced for small loads by setting the "Water Level Control." The washer could be stopped or started at any part of the cycle. The cycle required 32 min. when the maximum washing time of 15 min. was used.

Performance in test: Effectiveness in washing a 7-lb. load, good. A larger load reduced the effectiveness of the washing action (8 lb. could be washed, but evenness and effectiveness of the washing action were decreased slightly). Effectiveness in extracting water from the clothes, good (water left in the clothes was about 73% of the dry weight of the clothes). Water consumption for a full load: 16½ gal. hot and 7 gal. cold water. Current drawn at start of spin, 8 amperes (desirably low). Tub coasting time at end of cycle, less than 10 sec. (desirably short). Occasionally got "off balance" on spin.

¶A well-built machine, but could not wash effectively as large a load as the other agitator-type machines. One-year warranty.

B. Intermediate

Kenmore Cycla-Fabric, Model 110-553590 (Sears, Roebuck & Co.) Cat. No. M5580, $235; Cat. No. M5590, with *Suds-Saver*, $255; plus shipping charges. Other *Kenmore* and *Whirlpool* automatic washing machines use a mechanism similar to the *Cycla-Fabric* machine except for the 2-speed motor which provides the slow washing action for the "Modern Fabric" cycle of the *Cycla-Fabric*.

Dimensions and description: Agitator type, top opening. 40½ in. high, 29 in. wide, 27 in. deep. Porcelain-enameled lid, top, and tub. Paint-enameled cabinet. Maker's capacity rating, 9 lb. Tub would not spin when the lid was open (a very desirable safeguard). Temperature of wash water adjustable by setting control to "Hot," "Med," or "Warm" for normal cycle only. Water for rinses and "Modern Fabric" cycle was automatically regulated to about 100° (warm). The water level was regulated by a pressure switch and was not affected by low water pressure (desirable). The amount of water used could be reduced for small loads by setting the "Water Level" control knob. The washer could be stopped or started at any part of the cycle. The machine had two separate and different cycles, one for regular fabrics, and a shorter cycle for modern fabrics. The "Modern Fabric" cycle has a shorter and more gentle washing and spinning action for use with "fine" fabrics or lightly-soiled clothes. The regular fabrics cycle required 40 min. when the maximum washing time of 14 min. was used. The "Modern Fabric" cycle required 19 min. when the maximum washing time of 4 min. was used. For the "Modern Fabric" cycle, the washing action and spin

operated at about 2/3 normal speed for more gentle treatment of the clothes.

Performance in test: Effectiveness in washing a 9-lb. load, good. Effectiveness in extracting water from the clothes, fairly good, in the regular cycle. The "Modern Fabric" cycle had more gentle (and shorter) washing and spinning actions. (Water left in the clothes at the end of the regular cycle was about 80% of the dry weight of the clothes; at the end of the "Modern Fabric" cycle, 100% of the dry weight of the test load.) Water consumption for a full load for each cycle: 26½ gal. hot and 10 gal. cold water for regular cycle, 14 gal. hot and 21½ gal. cold for "Modern Fabric" cycle. *Suds-Saver* could be used to save about 16 gal. of wash water from first load for re-use for second load. Current drawn at start of spin, 9 amperes (desirably low). Tub coasting time at end of cycle, about 15 sec. (fairly short). Leakage current, slightly above CR's limit (slight shock hazard); in other respects, the *Kenmore* was worthy of an *A-Recommended* rating.

¶One-year guarantee, plus additional 4-yr. guarantee on transmission.

Westinghouse Laundromat, Model L-8 (Westinghouse Electric Corp., Mansfield, Ohio) $320.

Dimensions and description: Rotating-cylinder type, opening on slanted front. 39½ in. high, 31 in. wide, 29 in. deep. Paint-enameled cabinet. Porcelain-enameled tub. Maker's capacity rating, 9 lb. Machine would not operate with door open, a very desirable feature. Temperature of wash water adjustable by setting control dial to "Hot," "Med," or "Warm." Water for rinses was automatically regulated to about 100° (warm). The water level was regulated by a pressure switch and was not affected by low water pressure (desirable). The amount of water used could be reduced for small loads by setting the water level control knob to the position indicated by the built-in scale used to weigh the clothes (a convenient device). The washer could be stopped or started at any part of the cycle. The cycle required 43 min. when the maximum washing time of 20 min. was used.

Performance in test: Effectiveness in washing a 9-lb. load, fair. (Somewhat better, but still only fair with a 7-lb. load.) Effectiveness in extracting water from the clothes, good (water left in the clothes was about 70% of the dry weight of the clothes). Water consumption for a full load: 16 gal. hot and 10½ gal. cold water. Current drawn at start of spin, 15 amperes (satisfactory). Tub coasting time at end of cycle, about 10 sec. (desirably short). Leakage current slightly above CR's limit (slight shock hazard). ¶One-year guarantee, plus additional 4-yr. guarantee on transmission.

Condensed listings of automatic washers previously tested by CR

Some of the machines listed have been replaced by newer models, but in most cases the newer models involve only differences in cabinet styling, and minor improvements in the mechanism. Many manufacturers use one basic design for all models, but add cabinet trim, small-load controls, and other "de luxe" features to the higher-priced models to differentiate them from washers at lower-price levels. The listings state the clothes capacity, the type of washing action, the type of water level control, the amount of water used for one full cycle, in order. The washing and water extracting effectiveness were good, unless otherwise noted. All have top openings except the rotating-cylinder types, which have the opening at the front.

A. Recommended

Bendix Economat H-502. 8 lb. Agitator. Pressure-type water level control. 32 gal. hot, 13½ gal. cold with two rinses. 24 and 7½ gal. with one rinse. Poor water removing ability. No vibration problems.

Blackstone 250. 8 lb. Agitator. Timed water level control. 19½ gal. hot, 13½ gal. cold.

Easy ADC. 8 lb. Agitator. Weight water level control. 22½ gal. hot, 8½ gal. cold.

General Electric IWA450K1. 8 lb. Agitator. Pressure water level control. 25½ gal. hot, 15 gal. cold. ¶Note: All current *GE* machines use a similar mechanism except for addition of "Filter Flo" on 750 model series (see listing, page 10).

Hamilton 330. 8-9 lb. Agitator. Timed water level control. 23½ gal. hot, 10½ gal. cold.

Norge AW-422. Essentially the same as *Hamilton.* ¶Note: Models *AW-425* and *AW-450* are basically similar to *AW-422.*

Speed Queen A11. 8 lb. Agitator. Timed water level control. 17½ gal. hot, 25½ gal. cold.

Whirlpool 531540. 8 lb. Agitator. Float water level control. 25½ gal. hot, 7½ gal. cold. *Suds-Miser* saves about 15 gal. of wash water for re-use in second load. ¶Note: All *Whirlpool* automatic washers built in the past 3 or 4 yr. have the same basic mechanism. There are two cabinet sizes, 24 in. wide and 29 in. wide. The 24-in. wide models hold 8 lb.; the 29-in. wide models hold 9 lb. of clothes and use several gal. more hot water per load. The differences between models are in the cabinet trim, addition of small-load controls, *Suds-Miser*, etc. The 1956 models continue to use the same mechanism with the addition of a short, slow-speed ("Delicate Fabrics") cycle in the highest priced line.

B. Intermediate

ABC O-Matic 50. 8 lb. Agitator. Timed water level. 13½ gal. hot, 11¼ gal. cold. Performance in test was good but rated *B. Intermediate* because of servicing troubles. CR does not have information on some *Kelvinator* models which appear similar to the *ABC* and are apparently holding up in service.

Apex Wash-A-Matic 6000. 8 lb. Wobbling basket. Timed water level. 13½ gal. hot, 13½ gal. cold. Washing effectiveness, fair, uneven.

Bendix Gyramatic G-314. 9 lb. Rotating cylinder.

Pressure water level control. 16 gal. hot, 17 gal. cold, with soak period. 13 gal. hot, 11 gal. cold, without soak. Fair washing ability.

Frigidaire WO-65. 8 lb. Plunger-pulsator. Timed water level. 18 gal. hot, 13.5 gal. cold. Complaints about tangling clothes. Best water removing ability of machines tested.

Universal AWS-30. 9 lb. Wobbling basket. Timed water level. 11¼ gal. hot, 19 gal. cold. Washing effectiveness, fair, uneven.

Combination washer-dryer

A. Recommended

Bendix Duomatic CCR (electric model). 8 lb. Rotating cylinder. Pressure water level control. 26 gal. hot, 14 gal. cold, with soak; 20 gal. hot, 9 gal. cold, without soak; plus 18 gal. additional cold water during drying period. Performance, generally good. Originally rated *B, Intermediate,* as it was to be expected the complex new mechanism might involve considerable servicing problems. The machine has now been on the market for over 2 yr. and appears to stand up in service as well as the average automatic washer and dryer.

• • •

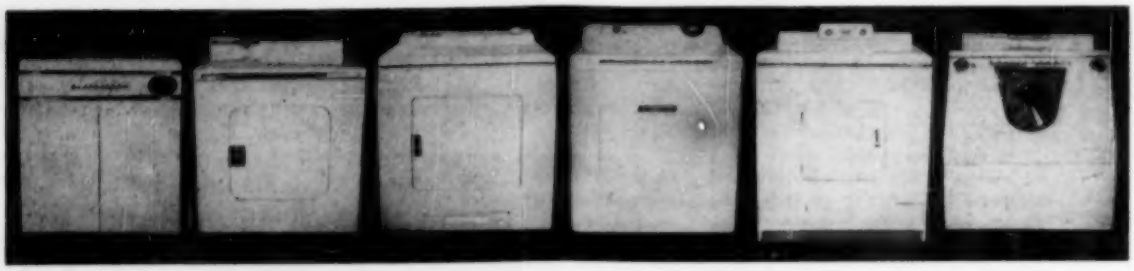
Other combination machines recently announced have not yet been tested. Readers should bear in mind that early models of complicated appliances often have faults, and changes and correction of errors in details of parts and design may frequently be made in subsequent production.

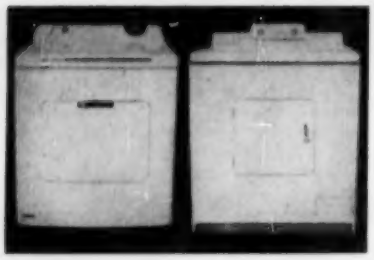
Washers Which Meet Various Needs and Conditions

IF YOU HAVE:

heavily-soiled clothes	much "delicate" laundry	very low water pressure	limited supply of hot water	limited space*
10 lb.				
GE Filter-Flo	*Easy*	*Bendix*	*ABC-O-Matic*	*Bendix (some models)*
	Hotpoint	*Easy*	*Apex*	*Kenmore (some models)*
9 lb.	*Kenmore Cycla-Fabric*	*GE*	*Bendix Gyramatic*	*Maytag*
	Whirlpool Two-Speed	*Kenmore*	*Universal*	*Whirlpool (some models)*
Hamilton		*Maytag*	*Westinghouse*	
Kenmore and Whirlpool (29-in.-wide models)		*Westinghouse*		
Norge		*Whirlpool*	**Water saved by re-use of wash water on some models of:**	
8 lb.				
ABC-O-Matic			*GE*	
Bendix Duomatic			*Hamilton*	
Bendix Economat			*Kenmore*	
Blackstone			*Maytag*	
Easy			*Norge*	
Frigidaire			*Whirlpool*	
GE 450				
Hotpoint				
Kenmore and Whirlpool (24-in.-wide models)				
Speed Queen				
7 lb.				
Maytag				

*25 inches wide, or less.





Automatic Clothes Dryers

THE automatic clothes dryer is the fastest-growing item in the major appliance field. Dryer sales for the first five months of 1955 were running about 75 percent ahead of the same period last year, while last year they were about 30 percent ahead of 1953. Manufacturers expect to sell well over a million dryers this year. That will still leave about 90 percent of the 45 million wired homes without a dryer.

One reason for the phenomenal increase in dryer sales is the boost being given by the utility companies. Each electric dryer installed means about $20 more revenue per year to the power company (and correspondingly, about $20 per year operating cost to you, the consumer). Because of this, some electric and gas companies have offered to subsidize appliance dealers' advertising of dryers, or have sponsored contests with big prizes for dryer salesmen. Others have rental plans, in conjunction with appliance stores, whereby the consumer may rent a dryer for about a dollar a week. If he decides to buy the dryer within a specified time, the rental fees he has paid may be applied to the purchase price. In some cases the dryer price may be paid to the utility company as a monthly addition to the gas or electric bill.

Some utility companies subsidize all or part of the installation costs for new dryers. If you want to buy a dryer but are uncertain about the charges for installation, you would be wise to look into this possibility. Installation charges may sometimes be a sizable part of the total cost of a new dryer.

Types of dryers

There are several types of dryers, but most of them consist basically of a revolving drum which tumbles the clothes, a source of heat, and a blower system to move the heated air through the tumbling clothes. About three of every four dryers use electricity as the source of heat, probably because the average price of electric dryers is about $40 less than gas dryers, and because electricity is more widely available than gas. Electric dryers, however, are usually more costly to install, and the monthly cost of operation will be much higher in most areas.

Most electric dryers are made to be run on a 220-240-volt service. However, some of them may be converted easily to 110 volts where the house is not wired for 220-240-volt service. When an electric dryer is run on an ordinary 110-120-volt house wiring circuit, ***nothing else should be plugged into the same line*** or the fuse will probably blow (as it should, to protect the line from overheating). The convertible dryers tested by CR drew 11 to 16 amperes when run at 118 volts (the so-called "design voltage," used in testing). Most house circuits should, for safety against fire, be fused for not over 15 amperes.

It takes 2½ to 3 times as long to dry clothes at the lower voltage as compared with 220-240, but with 110-120 there may be a slight saving in the amount of electricity used. Gas dryers take about the same amount of time per load of clothes as electric dryers run on 220-240 volts.

One of the main factors influencing drying time is the amount of water extracted from the clothes by the washer. The smaller the amount of water that is left in the clothes when they are put in the dryer, the shorter the drying time, and the lower the cost of gas or electricity for drying. Spin-dried clothes contain much less water than those put through a wringer.

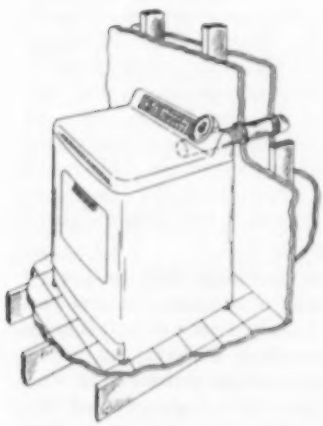
All the dryers in CR's current test were timer-controlled except the *Westinghouse*. That is, the housewife sets a timer dial to the number of minutes she thinks it will take to dry the clothes properly. The machine runs for the selected time and then shuts itself off. If she has underestimated the time, the clothes will still be damp; if she overestimated, the clothes will be overdried. Overdrying sets wrinkles and weakens fabrics, causing them to wear out sooner.

The *Westinghouse Model D-8* is both time and temperature controlled in that it shuts itself off if the clothes become dry before the end of the time selected, but it will not continue running if the clothes are still wet when the time runs out. It also has a "dry" setting; with this the machine runs until the clothes are completely dry.

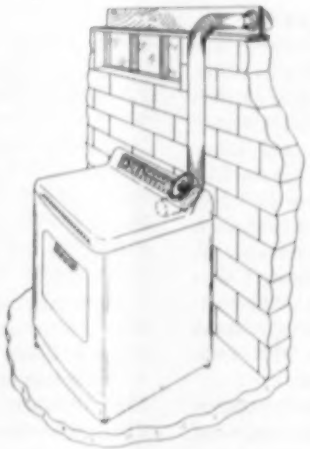
Venting

When the clothes dryer industry was young, its worst growing pains were caused by the moisture and lint which dryers discharged into the room. Now, nearly all dryers have provisions for disposing of the moisture and lint satisfactorily. Some, such as the *Maytag 60W05*, condense the moisture with cold water, and send it, and most of the lint, down the drain. This may involve the extra installation expense of a cold-water tap and drain, but dryers are usually located where these are available. There is also the cost of about 20 gallons of cold water per load which must be added to the operating cost. This type of dryer is recommended, if circumstances preclude installation of a suitable vent for carrying the moisture and lint outdoors.

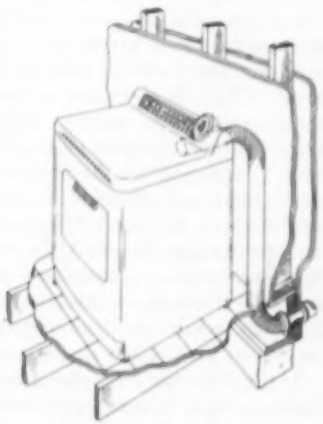
All the dryers tested (except the *Maytag 60W05*, which was "sealed," with no hot-air vent or outlet) exhausted the air through a lint trap or screen. However, some lint always managed to get through the screening material with the exhaust air. The exhaust should be carried outdoors by a vent pipe, if at all possible. Otherwise the moisture (as much as a gallon in one dryer load) may eventually cause damage to the woodwork or wallpaper. The lint screen should be cleaned out after every washday—a very easy but important task—and the entire dryer and vent system should be thoroughly cleaned every month or two. If this is neglected for too long, the accumulation of lint will reduce the effectiveness of the blower in discharging the moist air, and, with a gas dryer, could cause a very dangerous condition through the backing up of poisonous gases into the room. The drum should also be wiped out after drying starched clothes, or colored clothes whose dyes may rub off and mark clothing in subsequent loads.



Kitchen or Laundry Room Installation. (Using outside wall)



Basement Installation. (Using outside wall)



Kitchen or Laundry Room Installation. (Using inside wall)

Illustrations taken from installation instructions for the Kenmore dryer

*Dryers, unless of the water-condenser type, should be vented to the outdoors whenever possible. Do not vent your dryer into a chimney. * * * In the picture at the right the vent pipe is carried under the floor to the outside wall.*

SUMMARY OF INFORMATION

	Blackstone	General Electric	Hotpoint	Kenmore
Model No.	191	DA-623M	LB-1	110.553890
Price	$250	$250	$200	$190
Rated Capacity, pounds	9	9	8	9
Rated Voltage	230	115 or 230	115 or 230	230
Rated Input, watts, or Btu/hr.	4800	1650 or 4800	1400 or 4700	8700
Current, amperes	22	15 or 21	11 or 20	37
Cost per Operation, cents†	5½	5½	5½	6
Time per Operation, on 230 volts, minutes	32	35	37	24
Time per Operation, on 115 volts, minutes	——	90	120	——
Drying Temp. Range, on 230 volts	Low — 95°-110° High—115°-120°	Low —110°-115° High—130°-145°	Low —100°-110° High—115°-120°	Low — 90°-150° High—105°-165°
Drying Temp. Range, on 115 volts	——	High—100°-105°	High—90°	——
Peak Temp. on 230 volts	Low —115° Med.—135° High—160°	Low —190° High—255°	Low —115° Med.—125° High—135°	Low —150° Warm—180° Med. —210° High —255°
Peak Temp. on 115 volts	——	High—105°	High—90°	——
Interior Light	no	yes	no	yes
Safety Switch on Door	no	yes	yes	yes
Leakage Current (ungrounded)	2 ma.	4 ma.	5 ma.	negligible

†Calculated on the basis of electricity at 2c per kwhr. for electric dryers, 3½c per kwhr. for gas dryers (see text); gas of a heat content of 1000 Btu per cubic foot at $1 per 1000 cu. ft.
*Plus the cost of 22 gal. of cold water.
‡Automatic control stops dryer when it reaches this temperature.

Advantages and disadvantages

Anyone who has read appliance dealers' ads or manufacturers' literature is no doubt familiar with the many advantages of owning a clothes dryer. The homemaker is freed from worry about soot, birds, sudden showers, and other hazards of the outdoor clothesline. She doesn't have to wait for fair weather to do her laundry, as she can wash on rainy days and use the clear, bright days for more pleasant activities. A recent study at Wayne University showed that the average homemaker uses over 43,000 foot-pounds of energy in hanging an average wash outdoors, while she does only about 1000 foot-pounds of work when she uses a dryer.

There are, however, also a few disadvantages. Certain white fabrics, particularly nylons, tend to turn slightly yellowish when dryer-dried. Frequently this is due to improper rinsing during the washing process. Residues of soap that are not rinsed out may become yellowed in the heat of the dryer, while line drying, having less heat and more sun-bleaching, may not produce this effect. Comparative tests on whiteness retention made by Elaine K. Weaver and Margaret Thomas at Ohio State University showed differences so slight in favor of outdoor drying that they could hardly be detected by the eye. Although whites may sometimes turn a little yellow in the dryer, colored fabrics retain their colors much better when dryer-dried, for the same sun-action which bleaches the white fabrics fades colored clothes.

Shrinkage of some materials may be greater when clothes are dried in a dryer; this is particularly likely with loosely woven or knit fabrics. In CR's test of 35 brands of T-shirts (September 1955 BULLETIN) the average shrinkage of line-dried shirts was 11 percent. T-shirts dried in a dryer at low heat with care not to overdry shrank an average of 14 percent. Overdrying, particularly, should be avoided as it helps cause shrinkage, as well as setting in wrinkles which are very difficult to remove.

Maytag	Maytag	Westinghouse	Kenmore	Maytag	
601C	60W05	D-8	110.553790	701C	*Model No.*
$250	$270	$240	$230	$300	*Price*
9	9	9	9	9	*Rated Capacity, pounds*
115 or 230	230	115 or 230	110	115	*Rated Voltage*
1650 or 4800	4800	1650 or 4800	37,000 Btu/hr.	18,000 Btu/hr.	*Rated Input, watts, or Btu/hr.*
16 or 22	22	15 or 21	6	5	*Current, amperes*
5½	6½*	5	1½	1½	*Cost per Operation, cents†*
32	42	29	—	—	*Time per Operation, on 230 volts, minutes*
80	—	85	20	35	*Time per Operation, on 115 volts, minutes*
Low—125°-130° High—125°-130°	Low—155°-185° High—190°-230°	Low—105°-110° Reg.—150°-180°	—	—	*Dry Temp. Range, on 230 volts*
High—90°	—	Reg.—100°-110°	Low—70°-160° High—185°-225°	Low—125°-130° High—125°-130°	*Drying Temp. Range, on 115 volts*
Low—160° Med.—185° High—210°	Low—230° Med.—250° High—270°	Low—270°‡ Reg.—270°‡	—	—	*Peak Temp. on 230 volts*
High—90°	—	Reg.—110°	High—225°	High—220°	*Peak Temp. on 115 volts*
yes	yes	no	yes	yes	*Interior Light*
yes	yes	yes	yes	yes	*Safety Switch on Door*
negligible	negligible	negligible	negligible	negligible	*Leakage Current*

Note: The "rated voltage" is that given on the nameplate; for example, an appliance rated at 115 volts is expected to operate satisfactorily at any working voltage between 110 and 120. Similarly a 230-volt appliance will operate satisfactorily at voltages between 223 and 240.

Special features

All the dryers included in this report work on the same general principles, but each has its own special features which the consumer should consider before deciding which to buy. The maximum length of the time cycle as set on the control varies from one hour for the *Kenmores* to three hours for the *Westinghouse*. The *Westinghouse* also has a "dry" setting and automatic shut-off, as mentioned earlier. All the dryers tested have a "cooling off period" in which the heat is turned off automatically for about the last five minutes of the drying time, while the tumbling action continues. The controls of the *Blackstone*, *GE*, both *Kenmores*, and the *Westinghouse* also have a no-heat setting. This is desirable in that it permits items that should not be subjected to heat, such as certain synthetic fibers, to be tumbled in a stream of air at room temperature.

Most dryers (see table) have both an interior light which goes on and a safety switch which shuts off the drum rotation and the heat supply whenever the door is opened. These two features are desirable for convenience and safety. Some (*Blackstone* and *Westinghouse*) have a warning bell which rings when the dryer stops.

All the dryers have easy-to-operate controls and good instruction books which *should be read*, but GE and Hotpoint have made good provision for those who won't study the book by listing brief instructions inside the dryer door (see illustration, page 29). Westinghouse has enclosed the instruction book in a plastic case that fits in a slot in the control panel where it will always be at hand (see illustration of *Westinghouse* washer, page 29).

One of the conveniences of automatic drying is being able to dry the laundry to even dampness for immediate ironing. Since immediate ironing is not always possible, the *GE* dryer has a sprinkler for those who don't like to sprinkle clothes by hand. This is a cylinder with a row of fine holes in it. It is filled with water, fastened

in the dryer drum, and the dryer is then run a few minutes on the no-heat or "Sprinkle" setting. Dampening the dry clothes in this way is certainly more convenient than sprinkling by hand, and when the recommended three or four pounds of clothes are sprinkled at one time, the device does about as good a job. The *GE* dryer also has a door that can be opened by hand or by bumping the latch with the knee for easy opening when both hands are full of wet clothes.

CR's tests

All the dryers were first given tests for electrical leakage and insulation. Three, the *Blackstone*, *GE*, and *Hotpoint*, were found to have leakage currents high enough to be dangerous on an ungrounded appliance. However, since dryers are meant to be permanently installed and *should always be grounded* by a large wire, solidly and permanently fastened to the dryer frame and a water pipe or other good ground, there would under normal circumstances be no shock hazard with these dryers. These three were considered acceptable for a *B-Intermediate* rating.

Each dryer was run for one hour at high and low temperature settings with a 16-pound wet load (8 pounds dry) to determine the highest temperature reached inside the drum. Temperature measurements were also made on the cabinets to see if they would become too hot to touch. The time and amount of electricity and/or gas required to remove 6 pounds of water from a 16-pound wet load was also determined. (The average automatic washer leaves about 6 pounds of water in a load originally weighing 8 pounds.) Comparative operating costs in the table are based on average values for gas of 1000 Btu per cubic foot at $1 per 1000 cubic feet, and electricity at 2 cents per kilowatt-hour for electric dryers and 3½ cents per kilowatt-hour for gas dryers. The difference in kilowatt-hour rate arises in the fact that persons using gas for drying clothes, cooking, water heating, etc., will very likely have to pay a higher rate for electricity, since they use less of it.

The *Kenmore* dryers made the most noise during operation, but none of the dryers tested were considered objectionable in this respect.

Test results are summarized in the table. The peak temperatures given indicate the highest temperature the dryers reached after the clothes became dry, as would occur if the drying time were overestimated.

Dryers which operate at relatively high temperatures will require careful selection of the correct time and temperature settings. This will be even more important as the dryer becomes

Rules for Use of a Dryer

1. Read the instruction book—it's well worth the time.

2. Do not overload the dryer, and do not overdry your clothes.

3. Be sure your dryer is correctly and securely grounded electrically.

4. Don't plug any other appliance into the same line when your electric dryer is running, if it is of the 110-120-volt type.

5. Clean the lint trap after every use, and the entire dryer and vent system occasionally as needed.

6. Never put clothes which have been dry cleaned with carbon tetrachloride, trichloroethylene, naphtha, or other volatile or flammable solvents in your dryer. The fumes are either dangerously poisonous or flammable, or both.

Look Ma, no hands! The door of the General Electric clothes dryer can be opened without using the hands, by pushing the door handle with one knee.

older and the thermostat becomes less accurate.

A poorly constructed and designed dryer can be a potential fire and shock hazard. It is, therefore, best to buy only well-known and established brands. Be sure that an electric dryer is one listed by Underwriters' Laboratories (*UL*) and a gas dryer was approved by American Gas Association (A.G.A.).

Electric

A. Recommended

Kenmore High-Speed (Sears-Roebuck's Cat. No. 26—M5890) Model 110.553890. $190, plus shipping.

Dimensions and description: Cabinet, 36 in. high plus 5 in. back panel, 29 in. wide, 26½ in. deep plus 14½ in. with door open. Diameter of door opening, 13 in. Door on front, opens downward. Porcelain-enameled top. Paint-enameled cabinet. Dryer can be operated on 230 volts only. Has provision for venting to outdoors. Safety switch shuts off dryer when door is opened. Temperature settings include Hot, Med., Warm, Low, and Air (no heat). Listed by *UL*. Parts of cabinet became quite hot (130°-160°) when operated on High setting. Because of high temperature of back plate, dryer should not be set against or too close to back wall, which would interfere with air circulation.

Maytag (The Maytag Co., Newton, Iowa) Model 601C. $250.

Dimensions and description: Cabinet, 36½ in. high plus 4½ in. back panel, 31½ in. wide, 28½ in. deep plus 15 in. with door open. Diameter of door opening, 13 in. Door at front has vertical hinges on left side. Porcelain-enameled top and drum. Paint-enameled cabinet. Dryer can be operated on either 115 volts or 230 volts. Has provision for venting to the outdoors. Safety switch shuts off dryer when door is opened. Temperature settings, High, Med., Low. Listed by *UL*.

Maytag (The Maytag Co.) Model 60W05. $270. (*Model 61W* is similar.)

Dimensions and description: Cabinet, 37 in. high, 31½ in. wide, 28 in. deep plus 14 in. with door open. Diameter of door opening, 13¼ in. Door at front has vertical hinges on left side. Paint-enameled top and cabinet. Porcelain-enameled drum. Dryer can be operated on 230 volts only. Condenses moisture inside the dryer by a continuous flow of cold water. Safety switch shuts off dryer when door is opened. Temperature settings, Low and High, or may be set at intermediate positions. Listed by *UL*.

Westinghouse (Westinghouse Electric Corp., Mansfield, Ohio) Model D-8. $240.

Dimensions and description: Cabinet, 36½ in. high plus 3 in. back panel, 31 in. wide, 28¾ in. deep plus 15 in. with door open. Diameter of door opening, 12½ by 10½ in. oval. Door on front, opens downward (desirable). Paint-enameled top, cabinet, and drum. Dryer can be operated on either 115 volts or 230 volts. Has provision for venting to outdoors. Safety switch shuts off dryer when door is opened, and when clothes become dry. Provision for keeping instruction book in control panel. Temperature settings include Low, No heat, Regular. Listed by *UL*.

B. Intermediate

Blackstone (Blackstone Corp., Jamestown, N. Y.) Model 191. $250.

Dimensions and description: Cabinet, 36½ in. high, 29 in. wide, 26 in. deep plus 13 in. with door open. Diameter of door opening, 16 in. Double doors on front of cabinet, hinged at sides. Paint-enameled top, cabinet, and drum. Dryer operates only at 230 volts. Has provision for venting to outdoors. Lacks safety switch on doors. Temperature settings include Hi, Med., Low, Off (no heat). Leakage current above CR's limit. Listed by *UL*.

General Electric (General Electric Co., Appliance Park, Louisville 1, Ky.) Model DA-623M. $250.

Dimensions and description: Cabinet, 37 in. high plus 4 in. back panel, 31 in. wide, 27 in. deep plus 18 in. with door open. Diameter of door opening, 13½ in. Door at front has vertical hinges on right side. Paint-enameled top and cabinet. Galvanized drum. Dryer can be operated at either 115 volts or 230 volts. Safety switch shuts off dryer when door is opened. Temperature settings: Low, High, Sprinkle. Leakage current above CR's limit. Listed by *UL*.

Hotpoint (Hotpoint Co., Division of General Electric Co., 5600 W. Taylor St., Chicago 44) Model LB-1. $200.

Dimensions and description: Cabinet, 36 in. high plus 2½ in. back panel, 31 in. wide, 29½ in. deep plus 19½ in. with door open. Diameter of door opening, 15 in. Door at front has vertical hinges on right side. Paint-enameled top and cabinet. Porcelain-enameled drum. Dryer can be operated on either 115 volts or 230 volts. Has provision for venting to outdoors. Safety switch shuts off dryer when door is opened. Temperature settings include High, Med., Low. Leakage current above CR's limit. Listed by *UL*.

Gas

A. Recommended

Kenmore High-Speed (Sears-Roebuck's Cat. No. 26—M5790) Model 110.553790. $230, plus shipping.

Dimensions and description: Same cabinet dimensions as *Kenmore High-Speed* electric model. Motor which rotates drum and operates blower powered by 110 volts. Has provision for venting to outdoors. Safety switch shuts off dryer when door is opened. Temperature settings include Hot, Med., Warm, Low, Air (off). Approved by A.G.A.

Maytag (The Maytag Co., Newton, Iowa) Model 701C. $300.

Dimensions and description: Same cabinet dimensions as *Maytag* electric, *Model 601C*. Motor which rotates drum and operates blower powered by 115 volts. Has provision for venting to outdoors. Safety switch shuts off dryer when door is opened. Temperature settings include High, Med., Low. Approved by A.G.A.

Going to Buy Both?

PERHAPS you are planning to buy both an automatic washer and an automatic dryer. If they are to be located next to each other, as is most convenient, you will naturally want them to look alike for appearance's sake. You can buy a dryer to match almost any automatic washer.

Consumers' Research believes that, if you decide to buy both appliances, you should choose on the basis of the automatic washing machine that best fits your needs, and then select the companion dryer. Washers differ in type of washing action and effectiveness in washing, and you may have to take into consideration any one of a number of factors, such as a limited supply of hot water or limited space (see page 13). Dryers on the other hand are much alike in their action and general design and differ primarily in convenience of controls, in means of removing lint, or in the length of time that it takes them to remove moisture from the clothes.

Consumers' Research has included in its study a number of matching washers and dryers. Those interested in the ratings of various matching units will find the following table useful. The dryers listed are electric models, unless otherwise noted.

WASHERS		DRYERS	
Name	**Rating**	**Name**	**Rating**
*Blackstone**	*A*	*Blackstone*	*B*
General Electric	*A*	*General Electric*	*B*
Hotpoint	*A*	*Hotpoint (water-condenser)**	*A*
		Hotpoint	*B*
Kenmore Cycla-Fabric	*B*	*Kenmore High-Speed*	*A*
		Kenmore High-Speed (gas)	*A*
Maytag	*A*	*Maytag*	*A*
		Maytag (gas)	*A*
		Maytag (water-condenser)	*A*
Westinghouse	*B*	*Westinghouse*	*A*

*Reported in a previous Consumers' Research Bulletin.

Synthetic Detergents

MUCH progress has been made in recent years by manufacturers in development of labor-saving appliances, such as the automatic washing machine, but the supplies used with these appliances have become more complex and more numerous. Outstanding in this respect are the washing compounds, soaps, and synthetic detergents.

What is a detergent

Probably the most misunderstood and misused word in classifying cleaning agents is the word "detergent." Briefly, the dictionaries define the word detergent as anything that removes soil. Water might fall within such a definition, of course, as it has some effectiveness in removing dirt. Soap, too, is a detergent, as are the newer synthetic (non-soap) detergents. For simplicity, those in the industry have accepted the coined word "syndet" as an abbreviated form for all synthetic detergents.

Difference between soaps and syndets

Whether to use a soap or a syndet will depend in large part upon the prevailing water conditions. Soap combines with the minerals which make water hard and forms an insoluble film or curd which is difficult to rinse out or float off the fabrics. If this film is left in the fabric, it gives a gray or yellow appearance to white clothes and a dull appearance to colored clothes. Further, soil and perspiration are generally acid in reaction and therefore make the wash water acid. Soap is alkaline, and in an acid solution

it tends to break down and be wasted. If you have hard water and want to use soap, you can use a packaged water softener (such as *Calgon, Noctil*) to soften the water. In an automatic washer, put the softener into the machine before you add the soap. It's a good idea to soften both the wash and the rinse water, even though this does mean paying some attention to the machine during its automatic operation. One company, according to a recent news item, puts out a water softening and filter unit especially designed for use with an automatic washer. It is expected this new unit will retail for about $80.

In hard water, syndets work well because they do not react with the minerals in water and hence do not form a curd or scum, and they do not lose their effectiveness in solutions that have a degree of acidity. If the water is soft or properly softened, the choice between a soap product and a syndet on the basis of washing effectiveness is one the user can make on her own preferences and experience.

Homemakers can distinguish between a soap and a syndet by observing the directions on the boxes. Manufacturers do not always distinguish between the two in labeling their products, but it is fairly safe to assume that if the information on the box reads "no soap scum" or "no hard water film," it is a synthetic detergent or soap substitute. Another distinguishing feature of syndets is the word "Detergent" which appears on the label of a number of brands where the manufacturer uses the same name on both soap and syndet, such as *Rinso*, which is a well-known soap, and *Rinso Sunlight Detergent*, a syndet. Similarly, *Oxydol Detergent* and *Super Suds Detergent* are syndets.

Classes of detergents

Soaps and syndets fall into two main classes: the light-duty or mild, and the heavy-duty or all-purpose, sometimes called "built." These two classes of detergents differ primarily in that the heavy-duty products, both soaps and syndets, contain alkaline salts for increased soil-removing effectiveness, and water-softening chemicals. Among the heavy-duty syndets, the homemaker also has a choice between high-sudsing and low-sudsing detergents.

Washing materials sold for home use are available in the following classes:

Light-duty or mild soaps: for hand or machine washing of fine fabrics and colors that would otherwise be harmed by stronger compounds. It is not advisable to allow delicate fabrics to become heavily soiled, as the mild detergents do not have the washing power to remove any great amount of soil. Examples: *Chiffon Flakes, Ivory Snow, Ivory Flakes, Kirkman Flakes, Lux, Nola.*

Light-duty syndets: same uses as light-duty soaps. Examples: *Breeze, Dreft, Trend, Vel.*

Heavy-duty or all-purpose soaps: for clothes washing in a power washer, and for all-purpose cleaning. Examples: *American Family, Duz, Fels Naptha, Gold Dust, Oxydol, Rinso, Soapine, Super Suds.*

Heavy-duty syndets (sudsing): same uses as heavy-duty soaps. Examples: *American Family, Cheer, Fab, Felso, Kirkman's, Oxydol, Rinso, Super Suds, Surf, Tide.*

Heavy-duty syndets (low-sudsing): for use particularly in revolving-cylinder (drum-type) washing machines and for all-purpose cleaning. Examples: *Ad, All, Dash, Fun, Spin, Stanson Suds, Vim.*

It is reported that at least two manufacturers are planning to market syndets that are intended for use with cold water. Since the temperature of the wash water in most homes tends to run well below that which has been found most effective, a syndet that will cleanse effectively with cold water will surely become very popular. It will surely find a welcome among those who when about to take a bath find that there is no hot water left because the hot water had been used to do the laundry an hour or so before.

What a Good Detergent Should Do

Dr. Foster D. Snell, an authority in the field of soaps and other detergents, has set forth the following requirements: "A detergent must first wet the soil; second, wet the surface to be cleaned beneath the soil; third, loosen the soil and disperse it in the form of small particles or globules throughout the wash liquid; and, fourth, prevent this dispersed soil from settling back on the cleaned surface."

How much detergent to use

The foam produced by a soap can be used as a measuring stick for the correct quantity of soap in washing, for if there are two or three inches of good, rich suds, it means that the hardness-producing minerals have combined with the soap, and that enough additional soap has been dissolved in the water to give effective washing action.

The foam produced by a syndet has no direct function in the cleaning action of a detergent, as

it does with a soap. However, because people have become accustomed to using the height of suds as a basis for judging the amount of soap to be added to the water, the detergent manufacturers formulate their sudsing syndets so that suds volume can be used as a measure for the correct amount of syndet, as with a soap. Whether a soap or a syndet is used, it is advisable to apportion *by weight or measure* the correct amount based on the particular washing machine and the hardness of the water. Usually, the washing machine instruction books explain this problem quite adequately.

Tests made on both types of detergents, low- and high-sudsing, indicate that the low-sudsing detergents generally do not have as good ability to remove soil as the high-sudsing syndets. The low-sudsing kinds are, however, equal to or superior to the others in preventing released or loosened soil from redepositing. Low-sudsing detergents can be used in automatic washing machines, particularly the rotating-cylinder or drum-type, without danger of suds overflowing during the washing operation, as is likely to happen when a high-sudsing detergent is used, unless care is taken to measure out no more than the correct amount of detergent. High foam tends to reduce mechanical washing action in rotating-cylinder or drum-type washing machines. With this type of machine, a low-sudsing detergent, even though somewhat inferior in its ability to remove soil, may prove to do a better over-all job of cleansing than the best high-sudsing detergent.

Test results

To evaluate the relative effectiveness of syndets in soil removal and minimum tendency toward redeposition of soil (anti-graying action), cotton cloths, soiled in a standard manner, were washed with each syndet in hard and soft water at both low and moderate concentrations. The foaming, or sudsing capacity, and stability of foam were also measured.

The range of cost per pound, to the consumer, of the brands purchased and reported on is from 19.4 cents to 32 cents. The cheapest are *Sail, Super Suds,* and *Rinso* (19.4 cents to 21.8 cents per pound), and the most expensive on a per-pound basis are *Kirkman* and *Breeze* (28.6 cents and 32 cents per pound).

CR's rating of syndets

A. Recommended

Breakwater (National Cooperatives, Inc., Chicago) 1 lb. 4 oz. box. High sudsing in soft water; moderate to low sudsing in hard water. *Soil removal:* good. *Anti-graying action* (see under head, "Test results"): good in soft water, fair in hard water.

Fab (Colgate-Palmolive Co., Jersey City, N.J.) 30c for 1 lb. 3 oz. Relatively high sudsing. *Soil removal:* good in hard and soft water. *Anti-graying action:* good in soft water, fair in hard water.

Oxydol Detergent (Procter & Gamble, Cincinnati) 30c for 1 lb. 3 oz. High sudsing, except at low concentrations in hard water. *Soil removal:* good. *Anti-graying:* very good in soft water, fair in hard water.

Rinso Sunlight Detergent (Lever Bros. Co., N.Y.C.) 30c for 1 lb. 6 oz. High sudsing. *Soil removal:* good. *Anti-graying:* very good in soft water, fair in hard water.

Surf (Lever Bros. Co.) 30c for 1 lb. 3 oz. High sudsing. *Soil removal:* good. *Anti-graying:* good in soft water, fair in hard water.

Tide (Procter & Gamble) 30c for 1 lb. 3 oz. High sudsing, except at low concentrations in hard water. *Soil removal:* good. *Anti-graying:* good in soft water, fair in hard water.

* * *

The following two detergents were considered slightly less effective than the foregoing six brands in soil removal in both hard and soft water.

Kirkman All-purpose Detergent (Kirkman & Son, Division of Colgate-Palmolive Co.) 30c for 1 lb. ¾ oz. High sudsing. *Anti-graying:* good in soft water, fair in hard water.

Super Suds Detergent (Colgate-Palmolive Co.) 30c for 1 lb. 7 oz. High sudsing, except at low concentrations. *Anti-graying:* good.

B. Intermediate

Ad (Colgate-Palmolive Co.) 39c for 1 lb. 8 oz. Low sudsing. *Soil removal:* fair. *Anti-graying:* very good in soft water, good in hard water.

All (Monsanto Chemical Co., St. Louis) 39c for 1 lb. 8 oz. Low sudsing. *Soil removal:* fair in soft water, relatively poor in hard water. *Anti-graying:* very good in soft water, good in hard water.

Breeze (Lever Bros.) 30c for 15 oz. High sudsing. *Soil removal:* fair at low concentrations, good at high concentrations. *Anti-graying:* good in soft water, fair in hard water.

Cheer (Procter & Gamble) 30c for 1 lb. 5 oz. High sudsing. *Soil removal:* fair. *Anti-graying:* very good in soft water, fair in hard water.

Dash (Procter & Gamble) 1 lb. 8½ oz. box. Low sudsing. *Soil removal:* good in soft water, relatively poor in hard water. *Anti-graying:* good in soft water, fair in hard water.

Sail (The Great A & P Tea Co., N.Y.C.) 23c for 1 lb. 3 oz. High sudsing. *Soil removal:* good. *Anti-graying:* relatively poor.

Vim (Lever Bros. Co.) 1 lb. 5 oz. box. Low sudsing. *Soil removal*: fair in soft water, relatively poor in hard water. *Anti-graying*: very good in soft water, good in hard water.

Bleaches

DIRT, grease, etc., can readily be removed from clothes in a solution of soap or syndet, but stains and the over-all yellowish or grayish cast that many white fabrics take on with time can be removed only with a bleach.

Use bleaches with care, keeping in mind that if a little bleach is good, *twice as much is not better*. Bleach can be highly destructive to fabrics if used improperly.

There are two main types of bleaches—the familiar oxidizing bleaches—and a rather new development generally known as optical bleaches.

Oxidizing bleaches

These react chemically by releasing oxygen, which acts to remove color from tinted materials. This is the kind of bleach that is of most interest to the homemaker. It can be bought in liquid or powdered form.

Liquid bleaches

1. Sodium hypochlorite. Though known as a chlorine bleach, it is an active oxidizing agent. It is strong and rapid in action, works well on white cottons and linens, but is destructive to animal fibers (wool, silk) and is unsuitable for colored fabrics and fabrics having certain wrinkle-resistant finishes (such as *Everglaze*, *Tebilized*, *Good Behavior*, and glazed chintz). Examples: *Clorox*, *Dazzle*, *Hi-lex*, *Purex*, *Rose-X*, *Speedup*, *White Sail*.

2. Hydrogen peroxide. This liquid can be used with reasonable success for bleaching silk, wool and colored fabrics. It deteriorates in storage. Hydrogen peroxide is sold under its own name at drugstores.

Powdered bleaches

1. Sodium perborate. This is a relatively slow-acting bleach suitable for use on all wool, silk, cotton, linen, and synthetic fibers. Examples: *Dexol*, *DuPont All Fabric*, *Glo*, *Safety*, *Snowy*, *Vano*.

2. Calcium hypochlorite. This chlorine bleach is in dry, granulated form, but is similar in action to sodium hypochlorite liquid bleach. Example: *Purex*.

3. Dichlorodimethylhydantoin (DDH). Products containing this chemical are appearing on the market. DDH is a heavy-duty bleach which slowly produces sodium hypochlorite in water. Examples: *Hi-lex*, *Pruf*, *Purex Beads-o'-Bleach*, *Sage*.

Optical bleaches

These, also known as fluorescent dyes, are now present in practically all soap and syndet products, and in some bluings. They are capable of converting the invisible ultraviolet light of sunlight into visible light which makes white fabrics appear whiter and colors brighter and clearer. Under artificial light or on a cloudy or hazy day, the effect of the dye may be slight or unnoticeable. Examples: *Nylonu*, *Jiffy*, *Pro-nyl*.

Suggestions in the use of bleach

When using a bleach, follow directions on the package carefully. All powdered bleaches are *not* alike.

If the label on the box advises that the product should not be used for wool, silk, rayon, etc., assume it to be a heavy-duty chlorine bleach. If the label recommends the product for wool and silk, it is one of the milder perborate bleaches.

Perborate bleaches are relatively gentle in their action and can be used safely on all fabrics and tub-fast colors and prints including silk, rayon, wool, and nylon. Chlorine bleaches are stronger, and their use should be limited to white cottons and linens. The permanent finish sometimes used on cotton fabrics retains the chlorine, resulting in deterioration of the fabric and possibly discoloration. Curtains and women's and children's cotton dresses are likely to have finishes of this kind. Responsible manufacturers are careful to label textiles that require special handling.

The best way to use a bleach (chlorine or perborate) is to add it to the hot wash water, and mix well before the clothes are put into the solution.

Chlorine bleach should not be used at too high a temperature. The temperature of the bleach bath or wash water should be at about 140° to 145° and should never exceed 160°.

When a chlorine bleach is used, the fabric must be rinsed thoroughly to remove excess chlorine from the cloth, or the fabric will turn yellow when ironed, and become weakened. Improper rinsing of clothes that have been bleached with a chlorine bleach can lower the temperature at which cotton will scorch in ironing by as much as 50°.

Do not use a bleach if the water is rusty. Bleach has a tendency to deposit iron on fabrics, and this will make the fabric yellow.

Chlorine bleaches can injure, dull, or roughen porcelain surfaces of sinks, lavatory bowls, and laundry tubs. Do not use a hypochlorite bleach such as *Clorox*, or *Purex*, in any stronger solutions or for a longer period than recommended by the manufacturer.

Starching Your Wash

IF you want really good-looking results from the home laundry, the chances are you will use starch on many washables. Starching adds a great deal to the appearance of many fabrics. Shirts, blouses, house dresses, aprons, children's clothes, dresser scarves, and curtains are commonly starched. You may be missing something, however, if you don't starch your bed linens, tablecloths, and napkins—not enough to produce a stiff, shiny surface, but just a hint of crispness.

What kind of starch?

You can pick and choose the kind of starch as readily as you choose the degree of stiffness that you want. Starches are of three basic types: regular vegetable starch, which may be in dry or liquid form, liquid plastic "starch," and a liquid "CMC"-based finish. Dry starch is usually cornstarch and comes in lump, cube, or powdered form. Familiar brands are *Argo, Cameo, Elastic, Faultless, Linit, Niagara,* and *Staley's,* some of which can be mixed quickly in cold water.

Liquid starch is made from the same basic ingredient as dry starch and needs only to be diluted with cold water to be used. *Linit, Rose-X, Sta-Flo,* and *Zippy* are well-known brands.

Plastic "starches" are also liquid but are made of resinous materials. The finish they give will as a rule last through several launderings, the number depending upon the concentration of the solution used in the original starching. Some people find plastic starches very satisfactory. On the other hand, it is difficult to maintain the desired crispness in clothes with them. Because plastic starch is difficult to remove from fabrics, care should be taken to adjust the strength of the solution to the type of fabric and the stiffness desired. Some formulations have resulted in yellow streaks on white clothes or white spots on dark clothes. *Perma Starch* is a well-known brand, and there have been some 30 or 40 other makers of plastic starches at one time or another.

Also on the market are finishes which do somewhat the same job as starches. One kind is based on "CMC" (sodium carboxymethyl cellulose). CMC coats fibers with a film to increase soil resistance and to give fabrics body without stiffness. It is higher in price than the usual starches. *Glosstex,* a liquid, is a brand of the CMC type.

Starching dark-colored cottons? Tint your starch. Use bluing for blues and blacks, tea for browns, and commercial tints for other colors.

Starch in your washer

To do a really good job you must work the starch carefully into the fabric. If there are a considerable number of pieces, you will find it convenient to let the washer do the job for you, whether your washer is a conventional type or an automatic one. Washer starching not only saves time and effort, it also gives a more uniform and smoother starch finish than many women get with hand starching. It is also an easy way to secure the same finish on duplicate articles, such as curtains, all starched at one time. Check your washer's instruction book before you attempt the job, however. Chances are you will find easy-to-follow directions included there.

Starch makers, too, issue recommendations for machine starching. The Corn Products Refining Company, for example, recommends the following procedure in their mimeograph, Starching in the Washer: to starch in a 7-gallon rinse, which is an average for tumbler-type automatic washers, you will need about 5 quarts of starch solution or about twice the amount you might usually make. Agitator-type washers hold 12 to 17 gallons of water. If the gallon capacity of the final rinse can be reduced, then the amount of starch can be reduced accordingly. A copy of the leaflet can be obtained from the company at 17 Battery Place, New York 4.

Other helpful guides put out by manufacturers of starches are:

How to Starch Your Wash, Faultless Starch Co., Kansas City 1, Mo.

Now . . . Quick Easy Starching in Your Automatic Washer, The Hubinger Co. (*Quick Elastic*), Keokuk, Iowa.

All You Want to Know About Starching, A. E. Staley Mfg. Co. (*Sta-Flo*), Decatur, Ill.

The Zippy Way to Starch and Iron Your Clothes (hand starching only), Zippy Products, Inc., Lansdowne, Pa.

When you starch in your washer, do a full load at a time, if possible. Put starch in the final rinse, if convenient. Or, after the clothes go through the entire wash-and-rinse cycle, reset the washer for the rinse cycle or the wash cycle. The wash cycle is often better, especially if the washer is one that has an overflow rinse. Most washer manufacturers recommend that

you do your starching at the end of your first wash load. Subsequent washings will then remove the starch from the basket of the washer. Otherwise, rinse the washer with clear water after starching.

How much starch for washer starching?

Check the instruction book of your washer first. It may give you the gallons of water used in the various rinses, and it will probably tell you how much starch you should add for a medium, heavy, or light starch finish. If you do not know how much water is in your washer (and some washer instruction books don't tell you), you may have to experiment a bit until you get the right starch solution. To secure consistently good results, take the time to measure when you experiment.

Most directions call for agitating the clothes in the starch solution for a short period of time, about one minute, and then spinning the clothes for about half the usual time.

Remember that you need only enough starch solution to cover generously the garments to be starched. Dry starch made up into a solution at home is probably the most practical kind for washer starching. Liquid starch is easy to use, and results are as good as with dry starches. Cost may make the use of liquid starches in the washer impractical. If convenience is important and worth money to you, however, you may not mind the extra cost.

Dry starched clothes in dryer?

There is no reason why you shouldn't dry starched clothes in the dryer. Starch clothes a little heavier than usual, as for a breezy day, especially if you plan to dry them completely. Dry starch will shake out in the dryer. On that account it is just as well to dry the clothes only to damp dry if ironing is to be done within a reasonable time. (It is risky to hold damp, starched garments too long because of danger of mildew and souring.)

Dryer manufacturers have a number of suggestions for successful drying of starched clothes. For one thing, they recommend that starched clothes be dried separately to avoid transfer of starch to unstarched articles and possible spotting of unstarched pieces. Be sure that the starch solution has been sufficiently wrung out or extracted before the clothes are put into the dryer, so that the starch solution does not drip into the dryer. Dripping starch solution may build up under the drum and lint will adhere to it. This lint-starch mixture could become a fire hazard.

After drying a heavily starched load, or even a lightly starched one, it is a good idea to wipe out the dryer drum with a damp cloth to remove all traces of starch and lint.

How do you know what you can wash in the automatic washer?

THE textile and garment trades are beginning to discover that women who have automatic washers want to be able to wash everything in them—even nylon stockings. As one observing home economist pointed out, "all of a sudden the textile industry is beginning to realize that there is a woman at the end of the production line and she is beginning to cause trouble."

There was a time not very long ago when clothing and household textiles were essentially cotton, linen, silk, and wool. Their performance when laundered and dry cleaned could be predicted on the basis of long experience and familiarity. The homemaker today, however, is faced with the need to choose from a wide variety of fabrics and finishes, and is obliged to guess whether or not to put them into her automatic washing machine with some one of the new detergents. Even that old staple, cotton, may now be processed in a number of ways to make it crease resistant, spot resistant, or soil resistant so that it cannot always be handled like the hardy staple it once was. Certain automatic dryers may seriously affect the dimensional stability of a cotton garment that could be expected to dry on the clothesline without much shrinkage.

In addition to the variety of finishes there are new synthetics such as Acrilan, Dacron, dynel, Orlon, Vicara, and many combinations thereof that may need special handling, as well as the familiar nylon, rayon, and acetate. Conscientious manufacturers have endeavored to provide some information on how their fabrics and garments may be "refreshed," but it is a great

nuisance to keep track of these small pieces of cardboard, called hang tags, and to consult them every time the laundry is done. Even if the conscientious homemaker does refer to her file of tags for family garments she will be confronted by a hodgepodge of terminology.

Here is a dress labeled "Pima cotton and nylon, washable (wash with a mild soap in lukewarm water)." Probably it is wise not to put this garment into the automatic washer.

A tag for a summer evening dress is labeled "all cotton" and on the reverse side "Do not wash this dress. We recommend dry cleaning."

Another dress labeled "55% pima cotton, 45% nylon" is labeled "Washable, fast drying." Perhaps that could be washed in the machine, but not put through the automatic dryer. Who knows?

Surely this label, "Guaranteed unconditionally washable," means the garment could be put through the automatic washing machine and dryer.

This wrinkle-resistant cotton shirt is advertised as "Easier to wash," "Dries faster," and "Will never shrink out of fit." Certainly that should be expected to go through any automatic washing machine and dryer without injury.

This fabric, according to the tag, is marked "Tebilized" and "tested crease-resistance," and the advice is given to "Wash as any fine fabric." "Do not boil or bleach." Should it be washed in the automatic washing machine or not? Presumably the only way to find out is to try it and see.

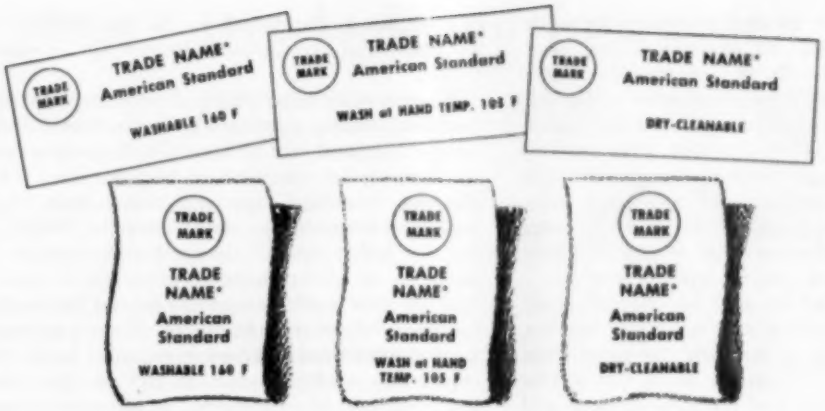
Admittedly this is a very tedious process, particularly when there are a number of garments in the family wash. It is sometimes costly to experiment, particularly when a garment fades, shrinks, or loses its finish the first few times it is laundered. Surely some technique, such as a sewed-in label either at the back of the neck or on a side seam of a garment, could be adopted indicating whether the garment can be satisfactorily washed in the machine by various methods and dried in the dryer, or specially handled, or whether on the other hand it should be dry cleaned.

In an effort to provide some information of this sort, one section of the clothing industry representing men's and boys' wear announced with great fanfare early in May 1955 what they called "Specifications for Labeling of Men's and Boys' Shirts, Pajamas and Sportswear." The avowed purpose was to provide labeling information and definitions of terms to inform the consumer as to the proper methods of laundering the garments and to provide manufacturers with uniform wording of appropriate labels, as well as definitions of the specifications with which the various labels should comply. The five classes of labels were: (1) Completely washable, (2) Fully washable, do not bleach, (3) Wash in warm water, do not bleach, (4) Wash by hand in lukewarm water, do not bleach, and (5) Dryclean. In addition, where special handling was required, it was suggested that the information should appear on the label and be amplified on the hang tag. These special directions might include: iron on wrong side, wash separately, use cool iron, etc.

The labeling plan was commended by various trade journals as a great step forward on the part of the industry to give the public better service and it was hailed as an example of the forward-looking leadership of the industry. It appears that the plan will probably go into effect on the garments of cooperating manufacturers made for the spring season of 1956. It is, however, entirely voluntary, there is no policing effort whatever, and it remains to be seen whether the consumer will really find the labels widely used, accurate, and meaningful.

Another industry effort is represented by the proposed Textile Fiber Products Representation Act which is designed in effect to broaden the present Wool Products Labeling Act. The objective is to empower the Federal Trade Commission to draw up definitions and generic names for textile fibers and to require such names to appear on the labels of products in which the fiber or fibers are used. The bill, prepared by the National Retail Dry Goods Association, has been introduced in the Senate as S.2288 by Senator Barry Goldwater of Arizona, who will, no doubt, be glad to send a copy to those who may wish to study it. One of the difficulties with this proposed legislation is that it is hard to define some of the new fibers accurately and simply. Furthermore, even if the consumer knows the name or names of the fibers in a particular garment or household textile, how will that help her determine its performance, particularly with respect to launderability? One Federal Trade Commission official is reported as suggesting that it might be more helpful to work up *performance standards*; then no matter what the fabrics are made of, if they have particular characteristics in use and in laundering, they can use identical labels.

It happens that the National Retail Dry Goods Association is sponsoring another effort which, if it is pressed to a successful conclusion, will provide the consumer with just this sort of information. It will be known as American Stand-



Sewn-in Labels

Three of the suggested labels as they might appear on garments and fabrics that meet the proposed American Standard for All Textiles.

*Name of Fabric or Garment Manufacturer

ard L.24/25 promulgated through American Standards Association procedure. If the proposed standards are adopted, they will constitute a yardstick of performance for consumers as well as yarn producers, mills, converters, dyers, manufacturers, and retailers. The labels suggested would enable the homemaker to determine on a sound, scientific basis just how to wash or clean the various garments which her family wears. There could be five classes of performance which might be labeled as follows:

Wash-160F	Wash-160F No bleach	Wash-120F No bleach	Wash-105F No bleach	Dryclean (1) Dry or (2) Dry Wet
AS-L25.1.5* Trademark	AS-L25.2.5* Trademark	AS-L25.3.4* Trademark	AS-L25.4.1* Trademark	AS-L25.3.5* Trademark
Purple Band	Green Band	Blue Band	Yellow Band	Red Band

*Identification of conformance with American Standard L25 according to test methods formulated by the American Association of Textile Chemists and Colorists, the American Society for Testing Materials, and others for washability, dimensional stability (including shrinkage), colorfastness to sunlight, laundering processes, perspiration, crocking, and permanence of finish.

The presence of such information on the label of a garment is the consumer's assurance that the garment and its components are intended to meet the approved American Standard.

The recommended labels to be sewn in the garment might, it has been suggested, bear a colored stripe for easy identification. With respect to washability:

PURPLE would indicate that the garment could be washed in 160° hot water in the washing machine.

GREEN would show that the garment might be washed in 160° hot water, but no bleach should be used.

BLUE might signify that the garment could be washed in water at 120° by hand, or in the automatic washer but at a lower temperature than for more durable garments. No bleach.

YELLOW could be used on garments which could be washed in water at 105°, but with which no bleach should be used.

RED would signal that the garment should be sent to the dry cleaner either for dry cleaning or "wet" dry cleaning and should not be put into the family washer under any circumstances.

Several meetings have been held this past year by representatives of manufacturers, trade associations, retailers, and consumers to bring about the voluntary adoption of these standards. Progress, however, is slow.

The position taken in withholding of approval of the "All Textiles Standard" by some sections of the trade is on the ground that there are not enough complaints to warrant the bother and expense of making certain that garments conform to the proposed L.24/25 standard and of having the tags and labels affixed to the garments or fabrics. It would appear that women who are dissatisfied with the performance of household textiles, or who have had particularly unhappy experiences with washing and cleaning garments, are not voicing their complaints in proper quarters. One able trade adviser has urged that women have a duty to bring back defective textiles to the store where they were purchased, as soon as they experience any difficulty, so that steps may be taken to save other consumers from the same disappointment. Since he is a consultant for one of the better department stores in this country, he is in a position to use such information effectively, and he has reported several cases where a speedy complaint by a consumer has prevented a manufacturer from turning out and delivering great quantities of a defective garment. Unfortunately, small shops are not in a position

to make refunds or to deal satisfactorily with consumer complaints, for manufacturers, as a rule, wash their hands of any responsibility where purchases are on a small scale. Big department stores, however, are usually quick to make refunds where textiles have turned out to be unsatisfactory in performance, through no fault of the consumer who purchased them in good faith. Furthermore, when a big store speaks to a manufacturer, he is pretty likely to listen and to heed criticisms of his product.

Where a consumer has had an unsatisfactory experience with textiles and does not see her way clear to taking it up with the store from which the purchase was made, we at CR will be glad to have an account of the difficulties to add to our file on the subject. Remember, however, that it is necessary to save the hang tag and, if possible, the bill of sale, and let us have these two items, together with a clear report of just what you found to be the failings or weaknesses of the garment or textiles in question.

Women who have charge accounts with department stores, particularly stores that belong to the National Retail Dry Goods Association, can help speed adoption of the proposed "All Textiles Standard" by suggesting that they would be interested in seeing that the NRDGA put the full weight of its prestige behind early adoption of the proposed American Standard L24/25, which will provide at least a beginning for clear, informative labeling. There are many women who would like everything to be in the completely washable class at 160° in the automatic washer, but those who do not expect such good performance from all the textiles they buy will at least be put on adequate notice as to how their garments may be properly and safely refreshed.

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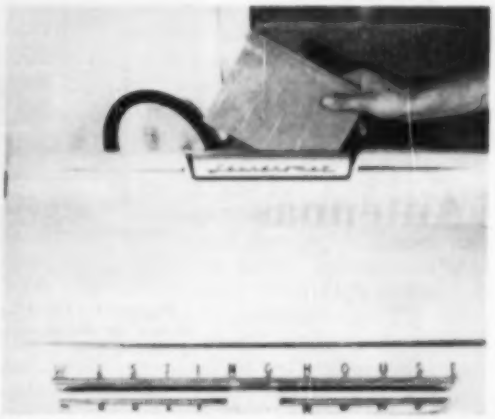
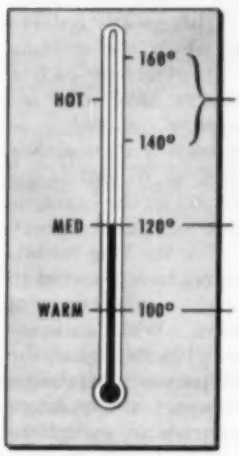
Don't Overlook the Instruction Book

YOU have gone to a lot of trouble and expense to get the best in washing equipment. Now you find that the results don't satisfy you. What's the matter? Perhaps you neglected to take an important first step—you forgot to read the recipe. Turning out a good laundry is akin to making a good cake in that it helps in both cases if instructions are followed.

Washer and dryer manufacturers make an effort to provide simple and easily followed instructions. For a number of years the American Home Laundry Manufacturers Association has sponsored National Home Laundry Conferences for the express purposes of exploring how to carry facts about laundering from scientists, engineers, and educators into the greatest possible number of American homes.



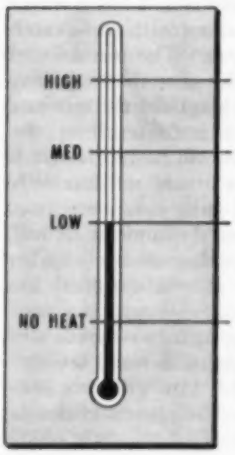
Westinghouse instructions are in a handy plastic case which fits in a slot at the back of the machine.



Water Temperatures for Washing

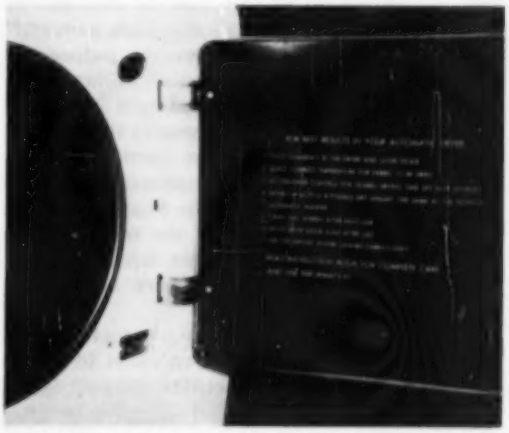
- 160°–140° (HOT): cotton; linen; Dacron; white Acrilan, dynel, nylon, Orlon, rayon
- 120° (MED): colored nylon, rayon
- 100° (WARM): rinse (all fabrics)

wash acetate; silk; Vicara; wool; colored Acrilan, dynel, Orlon



Heat Control Settings for Drying

- HIGH: cotton, linen
- MED: wool, rayon
- LOW: silk, knitted cottons, synthetics (if no "no heat" setting)
- NO HEAT: synthetics: acetate, Dacron, dynel, nylon, Orlon, etc.



Abbreviated instructions are printed on the door of Hotpoint and GE appliances.

In their booklets, the manufacturers give the settings for washing and drying specific fabrics, the weight of clothes per load, and other pertinent information such as the amount of detergent to use, approximate drying times, and what to do if the machine stops. They also tell how to wash and dry items such as blankets, rugs, and pillows. Some manufacturers have the instructions conveniently available, right at the machine, where they won't be lost or mislaid.

Be sure to use the instruction book. It is a helpful accessory for your automatic equipment. As Mrs. Kiene, Director of the Westinghouse Home Economics Institute, points out, "You'll be repaid a dozen times over with the ease and success you have" in using your equipment.

Indoor Television Antennas

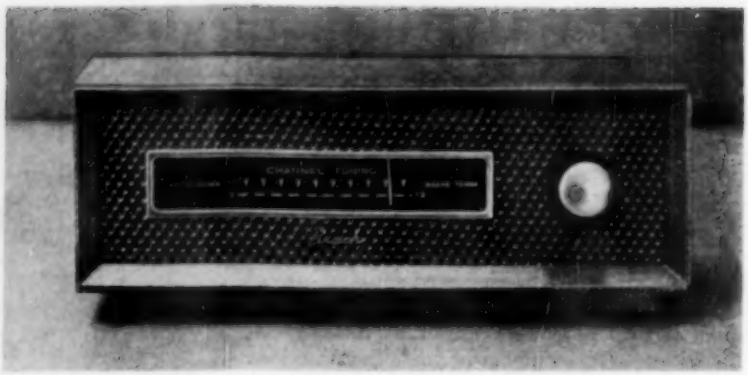


Figure 1—*The Magne-tenna is a type of indoor antenna that can be tuned. A knob is used for station selection. The device uses a ferrite rod for tuning a built-in antenna of the coil type.*

TELEVISION RECEPTION by use of an indoor antenna is now possible in many areas where heretofore only poor or inconsistent reception was to be had unless a high gain outdoor antenna was used. Thus the indoor antenna has become more popular of late, and sales have increased correspondingly in metropolitan areas. The improvement in reception is partly due to the fact that in recent years the Federal Communications Commission has permitted many television stations to increase their power greatly. Besides this, the modern television receivers employ tuners which are far more sensitive than older tuners and afford better noise rejection.

Antenna manufacturers have brought out a variety of indoor antennas in an effort to gain a position in the highly competitive market. Some of the antennas are patterned after the original "rabbit-ear" type; others attempt to get superior results by incorporating electrical devices for varying the effective length of the "ears."

The rabbit-ear antenna, introduced in the early days of television, is still popular because of its low price and its usefulness in strong signal areas. The antenna elements can be placed horizontally (spread) for reception of weak signals or vertically during strong signal reception, if space is a problem. The assembly can also be swung around to give needed adjustment to the direction of the transmitting station. The antenna rod lengths are usually adequate for all channels from 2 to 13 inclusive.

One serious drawback of the rabbit-ear type of antenna is its inability to transfer efficiently to the receiver the energy it picks up. Technically, it is desirable to "match" the antenna to the receiver. Since most television receivers have an input impedance of 300 ohms and the rabbit-ear antenna has only a 75-ohm impedance, a 4 to 1 mismatch occurs. This greatly reduces the strength of the signal which the antenna delivers to the receiver. To overcome such a mismatch, some manufacturers have used so-called "phasing bar" elements. A switch is usually employed to place such a phasing bar across the antenna elements, or to switch the phasing bar to one antenna rod or the other, as trial indicates to be desirable for best reception.

In an effort to dispense with the long rabbit-ear "rods" some manufacturers have resorted to resonant circuits that employ combinations of coils and other tuning devices. While such antennas are capable of "tuning" in the signal, the lack of antenna rod length prevents maximum signal pickup, and such compact antennas are useful only in areas where signals are exceptionally strong.

Antenna length is important and has a direct bearing on the results obtained with some modern types of indoor antennas. The transmitted signal has a wave-length related to the frequency of the signal, and thus the length of the antenna elements is one factor that determines the strength with which signals will be received. If the antenna elements are made substantially shorter, the antenna will give relatively poor results for the lower-numbered channels. It will, however, function well for other channels higher in number than the one it was designed for. Thus, for channel 2 the magic length is a fraction over 100 inches. An antenna having elements about 30 inches long will work satisfactorily for channels 7 to 13, but will give poor performance for the lower-frequency channels, 2 to 6.

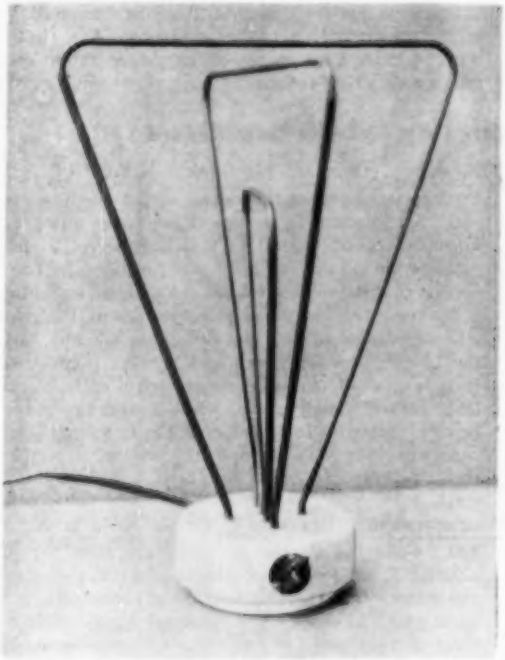


Figure 2—*The Walsco Star indoor antenna, which uses three loop elements. A 6-position switch permits selection of the individual loops or combinations of loops. This makes it less necessary to swing the antenna around for best orientation.*

This fundamental requirement for good reception presents a difficult problem to antenna manufacturers, for it hampers their efforts to produce an indoor antenna which is of a more compact design than is exemplified in the extended rods of the rabbit-ear type. Even with the rabbit-ear antenna, rod length has been reduced in many instances to 30 inches each (60 inches total span) to make the antenna less cumbersome when the rods are extended. The loss for the lower-numbered channels in terms of signal pickup is unavoidable, but relatively unimportant, since the losses are less noticeable for these channels and the pickup can be less efficient and still serve.

There are four general rules which apply to any indoor antenna, for procuring maximum signal pickup: (1) The antenna elements should be in a horizontal plane. (2) The length of the elements must be adequate for the lowest numbered channel to be received. (3) The antenna must be compatible (matched) electrically with the receiver. (4) The antenna must be positioned (oriented) properly with respect to the transmitting station.

Factors such as height and clearance with respect to surrounding metallic objects are also involved, but these are variables encountered in installation and beyond the control of the antenna manufacturer.

The *TENtenna* and the *Magne-tenna* were found to be suitable for VHF (channels 2 to 13) reception only. The antennas with the rabbit-ear rods (*Snyder 3-D* and *5-D, RMS KV-3*) and the *Walsco Star* loop type are suitable for VHF (channels 2 to 13) and also for UHF, provided the UHF stations are within approximately 15 miles and broadcasting with high power. If such an indoor type is purchased for UHF reception, the purchaser should ask for a demonstration, or be permitted to test its reception capabilities himself. UHF reception is less predictable than VHF and, in addition, the strength of the UHF signals diminishes rapidly with increasing distance from the transmitter. UHF signals also set up more room reflections and "ghosts" and hence an outdoor antenna is likely to be much more satisfactory for UHF reception than an indoor type.

For VHF stations within about 25 miles, a good modified rabbit-ear type will perform better than a built-in antenna—though reception is dependent on whether the antenna is used downstairs or on an upper floor, and depends, too, on the nature of the surrounding terrain with re-

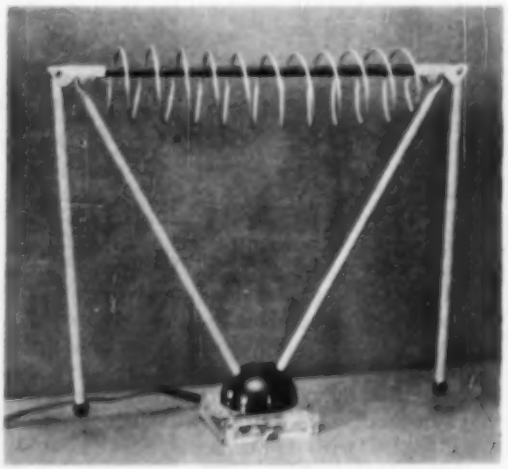


Figure 3—*The Unbranded antenna, a more elaborate version of the rabbit-ear type. There was no provision for circuit selection on the model tested.*

spect to hills, tall buildings, etc. While reception over distances greater than 25 miles can sometimes be had for indoor antennas, an outdoor antenna will generally prove more satisfactory.

Following are listings of several representative indoor antennas which were tested, and their performance compared with a simple rabbit-ear type of indoor antenna in terms of signal pickup, ability to minimize interference and ghost reception, and operational characteristics.

A. Recommended

Snyder 3-D (Snyder Mfg. Co., Philadelphia) $7.95. Modified rabbit-ear type. Oval base was small, but would tip only if one rod was in vertical position and the other rod extended fully in horizontal plane. 6-position selector switch for best performance on each channel. Non-adjustable phasing bar. Antenna rods, extended, measured 78 in. tip to tip. Gain superior to that of simple rabbit-ear type for all VHF stations. **1**

JFD Star (JFD Mfg. Co., Inc., New York City) $9.95. Modified rabbit-ear type. Electrically similar to *Snyder 3-D* and *RMS KV-3*, except that 6-position selector switch was mounted on ball instead of base. **2**

RMS KV-3 (Radio Merchandise Sales, Inc., N.Y.C.) $9.95. Modified rabbit-ear type. Similar to *Snyder 3-D* above, but smaller oval base and plastic ball. **2**

Unbranded (Thought to be made by KG Electronics Corp., Chicago 14) $9.95. Modified rabbit-ear type. Heavy glass base. Antenna rods, extended, measured 40 in. tip to tip. Superior gain compared to simple rabbit-ear type for all VHF stations. **2**

Snyder 5-D (Snyder Mfg. Co.) $12.95. Modified rabbit-ear type. Heavy, non-tipping base. Push-button selection for tuning, and adjustable phasing bar. Antenna rods, extended, measured 74 in. tip to tip. Superior gain compared to simple rabbit-ear type for all VHF stations. **3**

C. Not Recommended

TENtenna (Dynamic Electronics, N.Y.C.) $4.95. Tuning type; gain of this device used alone was less than that afforded by a typical rabbit-ear antenna. Must be moved around to find best reception for each station. Two lengths of wire furnished for connection to this antenna in areas of low signal strength. When these two lengths of wire were added, the gain was comparable to that of a rabbit-ear antenna, but the 12-selector switch was no longer very effective (two lengths of insulated copper wire, each 60 in. long, served equally well, without the *TENtenna* being attached). Installation of the two lengths of wire was inconvenient, and the use of a simple rabbit-ear type provided results that were equally good. **1**

Magne-tenna (Brach Mfg. Corp., Newark, N.J.) $20. Gain below that of rabbit-ear type except channel 3, where gain of *Magne-tenna* was slightly the better. The coil and ferrite rod furnished maximum gain and efficiency on channel 3 only. Placement of twin-lead from antenna to input terminals of receiver was critical, and twin-lead had to be moved around to get best results. **3**

Walsco Star (Walsco Electronics Corp., Los Angeles 16) $12.95. Gain less than given by an antenna of the rabbit-ear type. Loop size inadequate for good low channel reception (biggest loop only 15 in. across at flat top portion, and 14 in. high). Switch losses high for higher-numbered channels. Porcelain base was light and moved about when the channel switch was manipulated. Loop elements were not fastened in receptacles in the base and came out easily if unit was accidentally jarred. **3**

Off the Editor's Chest

(*Continued from page 2*)

cheaper to borrow from the bank to make an important purchase than to accept the financial arrangements made by the dealer from whom a car, TV set, or appliance is purchased. In the case of food freezer plans, particularly, some of the time payment propositions have been dubious at best, and unwary purchasers have discovered that they have committed themselves to paying out a considerably larger sum than was intended, with no firm assurance of delivery of the quantity and quality of food promised.

The thrifty-minded will be wise to do some figuring before committing themselves to a large purchase even if the small weekly payments and advertising claims make it *seem* like an extremely reasonable proposition. Perhaps the amounts saved by waiting six months or a year until enough money is accumulated to pay *cash* for the appliance will be sufficient to permit the purchase of some other desired item—in other words, to make two purchases for the price of one. That's really getting a bargain!

Don't be like the girl who said she thought she'd buy a *Cadillac* instead of a *Buick* because the payments were the same, only you had to make them for a longer time on the *Cadillac*.

The Consumers' Observation Post

(*Continued from page 4*)

REPLACEMENT VACUUM CLEANERS must be renovated with the proper parts if they are to be represented as rebuilt under the original brand name. In a recent court case a vacuum repair company was found guilty of deceptive and unfair trade practices for repairing used Electrolux vacuum cleaners with parts that were not manufactured by the Electrolux Company, and then advertising them inaccurately. In a unique disposition of the case, the repair firm and the sales company which marketed the repaired cleaners were allowed to settle the case by publishing an apology for their misrepresentations in the trade press, setting forth in detail the techniques which they had used to deceive retailers into thinking that the repair jobs were equivalent to those which would have been carried out by the Electrolux factory.

* * *

FISH STICKS already prepared are often a convenient food for the homemaker. It is wise, however, to check the size of the package which comes, as a rule, in 10 oz. and 8 oz. Careful reading will indicate just how much the purchaser is getting for the price paid. Fish sticks also may be breaded so heavily that a fish price is being paid for bread crumbs. Here experience on what brands give the most for the money will be an effective guide.

* * *

ADEQUATE ELECTRICAL WIRING of homes both new and old is being emphasized in a campaign put on by the Commonwealth Edison Co. in the Chicago area. Surveys indicated that many families were prevented from enjoying a number of modern electrical conveniences because of inadequate two-wire service in their homes. The Chicago utility company has established on an experimental basis a plan whereby the company will pay the expense of replacing two-wire 120-volt service with the more modern three-wire 240-volt service to buildings of one-, two-, or three-family units. To qualify under the plan, occupants or owners must install at their own expense a 240-volt appliance together with a main switch and the required appliance circuit. In return the company will supply and install the service entrance necessary to modernize the wiring. Savings to customers taking advantage of the program are expected to average about $35 a job, according to Retailing Daily.

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THE EFFECT OF STORAGE in a home freezer on gingerbreads was the subject of research at Michigan State College by Dr. Pauline Paul, Elva Sween, and Barbara Bittner. Gingerbreads were made up fresh and from dry and commercial mixes, stored already baked, and in batter form for one to four months frozen. At the end of one month of storage, it was observed that the frozen baked gingerbread scored much lower than either the freshly baked or gingerbread made from the frozen batter. The frozen baked gingerbreads deteriorated sharply during the first month of storage and were considered unacceptable after four months' storage. Gingerbread made from the freshly prepared, frozen batter, and the home-prepared mix gingerbreads all scored "good" to "very good" for four months. The commercial-mix gingerbread deteriorated in flavor, tenderness, and texture with storage and was just barely acceptable after two months.

* * *

SITTING STILL TOO LONG in a bus or automobile while traveling may cause serious illness. One medical journal reports the case of a 72-year-old woman in good health who took a trip by bus to Florida which required about 68 hours. Three nights were spent on the bus, and toward the end of the trip the traveler noted considerable swelling of her legs from the knee to the ankle. After a stay of a few days, she returned home by bus and the swelling of her legs was quite noticeable. Then she suffered several convulsions and was hospitalized. After a few days of rest in bed, she recovered. In analyzing the various factors of this particular case, the attending physician suggested the importance of frequent stops on long automobile trips to permit considerable exercise of the legs. With older people he suggested leg bindings and, if swelling should appear, interruption of the trip for a rest in bed.

* * *

HOW MUCH DOWN should there be in an all-down pillow? That question was recently debated before the Federal Trade Commission. One group of manufacturers argues that if 85% of the pillow contained down and small, fluffy waterfowl feathers it should be labelled "down." The F.T.C. attorney insisted that 85% down means down and that the remaining 15% is the tolerance for variations in the stuffing including small feathers. There seemed to be some agreement on both sides that, as a practical matter, it is very difficult to label the contents of feather pillows accurately. The final ruling of the F.T.C. in the case was that 15% is sufficient margin for error in the classification of filling materials.

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Phonograph Records

BY WALTER F. GRUENINGER

Please Note: The first symbol applies to quality of interpretation, the second to fidelity of recording.

Bach: *Cantatas 54* and *170* and *Agnus Dei* from *Mass in B Minor*. Alfred Deller (counter-tenor) with Leonhardt Baroque Ensemble. Bach Guild BG 550. $4.98. Fine works sung by a most unusual voice, that of a male alto of remarkable purity and flexibility. Richly recorded. There is the possibility, however, that Mr. Deller's voice may not appeal to some. Best hear before buying. AA AA

Bach: *Toccata in D Minor*. Biggs (organ). Columbia ML 5032. $4.98. An adventure in hi-fi. Bach's famous piece is played on 14 of Europe's finest organs. It's interesting to hear the different quality of tone, the variation in pitch and reverberation. The concluding *Fugue* is played only in the Royal Festival Hall. But 14 performances of the same piece are a lot! AA AA

The Smiling Bach. Various Soloists and Orchestras. RCA Victor LM 1877. $3.98. Principally lively, gratefully melodic bits from Bach works played by Landowska at the harpsichord and, in other record bands, the RCA Victor Orchestra under Reiner. As an introduction to Bach, this will do. But no seasoned music lover is likely to settle for less than a whole work. A AA

Brahms: *Sonatas Nos. 1 and 2 for Violin and Piano*. Goldberg and Balsam. Decca DL 8 9720. $4.98. Lyric, tender works in which the majority of the ideas are given to the violin which is rather well played by Goldberg, but with insufficient romantic breadth. There's fine ensemble here, too. Balance favors the violin. A A

Elgar: *Enigma Variations, Cockaigne Overture, Serenade for String Orchestra*. Royal Philharmonic Orchestra under Beecham. Columbia ML 5031. $4.98. Rich, deeply satisfying music which Beecham conducts sensitively. Some passages are played more slowly than usual. Excellent recording. An outstanding disk. AA AA

Orff: *Antigonae*—Scenes IV and V. Goltz, Uhde, Greindl, etc., under Hollreiser. Columbia ML 5038. $5.95. Many regard Orff as Germany's most distinguished living composer. But this stark tragedy by Sophocles will appeal to few beyond the "advance guard." The "new" though somewhat primitive phrases, *Sprechstimme*, huge percussion section—all of which Orff employs—are a long way from the popular, lush music of the romantics. Once the shock wears off, how often will the music seem worth hearing? The performance under Orff's personal supervision must be regarded as definitive. Excellent recording. Better Orff may be found in *Carmina Burana* on Decca 9706. AA AA

Rodgers & Hammerstein: *Oklahoma!* McRae, Grahame, Nelson, etc., under Blackton. Capitol SAO 595. $5.95. From the sound track of the motion picture comes this high-fidelity recording of the overture and 11 top song hits. The performance is good, though a little less animated than that heard on Decca 8000 which presents featured members of the original New York production. Capitol's recording is better. A AA

Russell: *A Square Talk on Popular Music* and *Survey of Singing*. Anna Russell (concert comedienne). Columbia ML 5036. $4.98. Fairly amusing party record in which Miss Russell spoofs popular songwriters and singers and their more serious cousins. But her funniest records, I think, were her first two—*Anna Russell Sings* (Columbia ML 4594) and *Anna Russell Sings! Again!* (Columbia ML 4733). A AA

Stravinsky: *Le Sacre du Printemps* and *Petrouchka Suite*. Philadelphia Orchestra under Ormandy. Columbia ML 5030. $4.98. Columbia has managed to squeeze these pieces on one disk at a sacrifice of fidelity. Better performances are available on separate disks. B B

Tchaikovsky: *Piano Concerto No. 1*. Bachauer with the New London Orchestra under Sherman. RCA Victor LM 1890. $3.98. The ever popular Russian work gets a thorough going over, which has moments that set it apart from other interpretations, but not enough of them. Solomon, Rubinstein, Horowitz, Cherkassky, and others are not displaced by this disk. Rich recording, though not widest range. A A

Tchaikovsky: *Romeo and Juliet, 1812 Overture, Marche Slav*. Philadelphia Orchestra under Ormandy. Columbia ML 4997. $4.98. New recordings of popular Tchaikovsky pieces. Perhaps too genteel and polished for some listeners, though on the whole played and conducted with the necessary excitement and lyric splendor. Recording of *1812* and *Marche Slav* seems "cramped" in relation to the wide ranged *Romeo and Juliet*. A B

Vivaldi: *The Seasons*. Philharmonic-Symphony Orchestra of N. Y. under Cantelli. Columbia ML 5044. $4.98. Instrumental reflections of nature, as a talented, virtuoso violinist and composer conceived them in the early eighteenth century. These pieces were played in the regular Philharmonic schedule last season and were lavishly praised by N. Y. critics. Little wonder why. Corigliano plays the solo violin skillfully. AA A

Austrian Folk Music Vol. 1. Preinfalk Choir and Folk Orchestra. Vanguard VRS 7026. $3.95. Principally choral yodels, humorous songs, dancing songs. Very folksy. Well recorded. A AA

La Danza! Hollywood Bowl Symphony Orchestra under Dragon. Capitol P 8314. $4.98. Spanish and near Spanish dance music, almost "popular," as "Siboney," "Mexican Hat Dance," "Castillane from Le Cid," "Tico Tico," etc. Spirited playing and wide range recording though the violins seem veiled. AA B

Heifetz Plays (violin). Decca DL 9780. $4.98. Solos transferred from 78 rpm. records made about 10 years ago. It is amazing how much better these pieces sound here than they did on the 78's. Impeccable playing of 17 encores by a master fiddler—"Moto Perpetuo," "Levee Dance," "Clair de Lune," "Humoresque," etc. AA A

Le Mal de Paris. Montero, Ferre, Amado, etc. (singers). Vanguard VRS 7030. $3.95. Atmospheric, flavorsome, intimate solos, with orchestral accompaniment. Ten songs and ballads of the Paris music halls. Expertly recorded. AA AA

An Igor Oistrakh Recital (violin). Vanguard VRS 461. $4.98. Young Oistrakh runs off some Bach, Vitali, Mozart, Vieuxtemps, Wieniawski, etc., heard frequently in violin recitals. His foundation is strong, his tone enticing. If his interpretations don't soar at all times, bear in mind that this is in comparison with the world's greatest violinists. Certainly his Bach sonata is small scale. Recording uneven. A B

Renaissance and Baroque Music for Lute and Guitar. Karl Scheit (guitar). Bach Guild BG 548. $4.98. Short works by Dowland, Waissel, De Visee, etc., dating, principally, from the 16th and 17th centuries. Scheit plays simply, letting the music speak for itself. It speaks softly, with limited appeal. Well recorded. A AA

Songs of Argentina. Leda and Maria (singers). Vanguard VRS 7028. $3.95. Nine short Creole songs based on indigenous melodies from northern Argentina. Alternately pathetic, romantic, nearly all strongly rhythmic. The colorful orchestra of Argentine folk instruments contributes mightily to the performance. Short measure in playing time, though. AA A

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For Consumers' Research

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